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THE

EDINBURGH MEDICAL AND SURGICAL JOURNAL:

EXHIBITING

A CONCISE VIEW

OF THE

LATEST AND MOST IMPORTANT DISCOVERIES

IN

MEDICINE, SURGERY, AND PHARMACY.

VOLUME FORTY-EIGHTH.
1837.

EDINBURGH:
PRINTED FOR ADAM AND CHARLES BLACK:
LONGMAN, ORME, BROWN, GREEN & LONGMANS, LONDON:
JOHN CUMMING, AND HODGES & SMITH, DUBLIN.

1837.

PRINTED BY JOHN STARK, EDINBURGH.

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1. The detrimental and fatal consequences of treating inflammatory abdominal Typhus as an ordinary Nervous Fever, illustrated by two cases terminating fatally.

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The following Publications have been received:—

A Practical Compendium of the Diseases of the Skin, including a particular consideration of the more frequent and intractable forms of these affections; with Cases. By Jonathan Green, M. D., Member of the Royal College of Surgeons in London, Fellow of the Royal Medical and Chirurgical Society, and late Surgeon in the Royal Navy. The second edition, corrected and improved, with two illustrative plates. London, 1837. 8vo. Pp. 371.

A Treatise on the Diagnosis and Treatment of Diseases of the Chest. Part I. Diseases of the Lung and Windpipe. By William Stokes, M. D., M. R. I. A., Corresponding Member of the Medico-Chirurgical Societies of Berlin and Leipzig, Honorary Member of the Hunterian Society of Edinburgh, Physician to the Meath Hospital and County of Dublin Infirmary, &c. Dublin, 1837. 8vo. Pp. 557.

Biographical Sketch of the late Edward Turner, M. D., Professor of Chemistry in University College, London, &c. &c. Being the Annual Address delivered before the Harveian Society of Edinburgh on the 12th April 1837. By Robert Christison, M. D., Professor of Materia Medica in the University of Edinburgh, &c. &c., President of the Society for the year. Edinburgh, 1837. 8vo. Pp. 47.

Rudiments of Physiology. By Dr Fletcher. Part III. On Life as manifested in Sensation and in Thought. Edited by Robert Lewins, M. D., F. R. C. P. E., with a Biographical Memoir of the Author. Edinburgh, 1837. 8vo. Pp. 144.

The Philosophy of Human Nature, in its Physical, Intellectual, and Moral Relations; with an attempt to Demonstrate the Order of Providence in the Threefold Constitution of our Being. By Henry M'Cormac, M. D. London, 1837. 8vo. Pp. 564.

Medical Essays. By J. Hungerford Sealy, M. D. E., A. B. T. C. D. No. II. The Imagination: its History and Effects on the Functions of the Body in Health and Disease. London, 1837. 12mo. Pp. 91.

A Companion to the Ship's Medicine Chest. Being a short Treatise on the Diseases of Seamen and others in Tropical Climates, with their Treatment exemplified in a familiar and easy way, avoiding all difficult and technical terms used in the Medical Profession. For the use of Captains and others belonging to Vessels trading to those Climates, not carrying Surgeons. By W. G. Faddy, Surgeon, late of the E. I. Ships, Mermaid, Royal George, Sesostris, and George the Fourth. London, 1837. 12mo. Pp. 60.

The National Impolicy of the present High Duty on Tobacco, extracted, for the Information of his Majesty's Government and the Members of both Houses of Parliament, from the Evidence given before the Commissioners of Revenue Inquiry; the Select Committee on the Growth and Cultivation of Tobacco; and the Commissioners of Excise Inquiry. London, 1837. 8vo. Pp. 27.

Observations on the Arrangements connected with the Relief of the Sick Poor; addressed in a Letter to the Right Honourable the Lord John Russell, Secretary of State for the Home Department. By John Yelloly, M. D.

F. R. S., Physician to her Royal Highness the Duchess of Glocester, late Physician to the London Hospital, &c. London, 1837. 8vo. Pp. 43.

The Report of the Poor-Law Committee appointed by the Provincial Medical and Surgical Association. Read at the Anniversary Meeting held at Manchester, July 1836. Second edition, with an Appendix, containing selections from the Evidence furnished from numerous Parochial Unions respecting the Medical Arrangements and their Effects. London, 1837. 8vo. Pp. 89.

A Letter to the Right Hon. Sir Henry Hardinge, K. C. B., M. P., on the Effects of Solitary Confinement on the Health of Soldiers in Warm Climates. By John Grant Malcolmson, F. R. A. S. and M. G. S. E. I. C. Service, late Secretary Madras Medical Board. London, 1837. 8vo. Pp. 23.

A Dictionary of Practical Medicine: comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, and the disorders especially incidental to Climates, to the sex, and to the different epochs of Life; with numerous Prescriptions for the Medicines recommended, a Classification of Diseases according to Pathological principles, a Copious Bibliography with References; and an Appendix of approved Formulæ; the whole forming a Library of Pathology and Practical Medicine, and a Digest of Medical Literature. By James Copland, M. D. F. R. S. Lecturer on the Principles and Practice of Medicine in the Middlesex Hospital Medical School; &c. &c. &c. Part IV. London, 1836. 8vo. Hectic Fever to Heart. *(Hypertrophy)*

The Cyclopædia of Anatomy and Physiology. Edited by Robert B. Todd, M. D. Professor of Physiology, and of General and Morbid Anatomy, in King's College, London, &c. &c. &c.. Part X. London, June 1837. Electricity to Eye.

The Transactions of the Provincial, Medical, and Surgical Association. Instituted 1832. London, 1837. 8vo. Vol. v. Pp. 527.

Ueber die Reposition der Nabelschnur von Dr G. A. Michaelis, Praktischem Aerzte und Geburtshelfer in Kiel. Berlin, 1835. 8vo. Pp 48.

An Exposition of the Symptoms, Essential Nature, and Treatment of Neuropathy or Nervousness. By James Manby Gully, M. D. London, 1837. 8vo. Pp. 192.

A Translation of the Pharmacopœia Londinensis of 1836, with Descriptive and Explanatory Notes on the Materia Medica, &c. By Thomas Castle, M. D., F. L. S., Consulting Physician to St John's British Hospital, Member of Trinity College, Cambridge. London, 1837. 12mo. Pp. 260.

Notice of Patents granted to Joseph Amesbury of Burton Crescent, in the County of Middlesex, Surgeon, for certain Apparatus used in the Treatment of Stiffness, Weakness, or Deformity of the Spine, Chest, or Limbs; accompanied with Practical Remarks and Illustrations. London, 1837. 8vo. Pp. 24.

A Treatise on the Influenza of 1837, containing an Analysis of One Hundred Cases observed at Birmingham, between the 1st of January and the 15th of February. By Peyton Blakiston, M. A. Med. Lic. Cantab. London, 1837. Pp. 60.

London Medical Gazette for the session 1836–1837, from No. 26, 25th March, to No. 38, 17th June 1837.

The Medico-Chirurgical Review and Journal of Practical Medicine. Edited by James Johnson, M. D. &c. New Series. No. 52. April 1837. No. 12 of a Decennial Series.

The British and Foreign Medical Review, or Quarterly Journal of Practical Medicine and Surgery. Edited by John Forbes, M. D., and John Conolly, M. D. No. 6. April 1837.

The India Journal of Medical and Physical Science. Edited by Frederick Corbyn, Esq. (New Series.) Vol. i. Nos. 4 to 12, and Vol. ii. No. 1. April 1836 to January 1837.

Comptes Rendus Hebdomadaires des Séances de l'Academie des Sciences. Par MM. Les Secretaires Perpetuels. (1er Semestre 1837. Nos. 8 to 22.)

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ERRATA ET CORRIGENDA.

Page 66, line 13, *for* disuse *read* disease.

—— 394, —— 11, from top *for* Dolacus *read* Dolaeus.

—— 410, after line 8, *insert*, "The coats of the internal jugular vein, which were externally exposed and denuded, were much thickened, and their internal surfaces were united by coagulable lymph, so as to obliterate the interior canal."

NOTICES TO CORRESPONDENTS.

Communications have been received from Dr WILLIAM DAVIDSON, Dr HUME WEATHERHEAD, Mr THOMAS LAYCOCK, Dr STEWART, Dr JAMES WEIR, Mr ROBERT DICK, and Mr WILLIAM LAW.

The following publications have come to hand :—

The Works of John Hunter, F. R. S. with Notes. Edited by James F. Palmer, Senior Surgeon to the St George's and St James's Dispensary; Fellow of the Royal Medical and Chirurgical Society of London, &c. Vol. iii. London, 1837. 8vo. Pp. 638.

Histoire des Maladies observées a la grande Armée Française, pendant les Campagnes de Russie en 1812, et d'Allemagne en 1813 ; par le Chevalier J. R. L. De Kerckhove dit de Kirckhoff, Ancien Mèdecin en Chief des Hopitaux Militaires, &c. &c. (Troisieme Edition.) Anvers, 1836. 8vo. Pp. 425.

Medicinisches Schriftsteller-Lexicon der jetzt lebenden Aertze, Wundärzte, Geburtshelfer, Apotheker, und Naturforscher aller gebildeten Völker. Von Adolph. Carl Pater Callisen, Ritter, vom Dannebrog, Doctor der Medicin und Chirurgie, &c. Bands 24 and 25.—E—L,—M—Z. Copenhagen, 1836-7. 12mo. Pp. 492, and 592.

On a New Mode of Treatment, employed in the cure of various forms of Ulcer and Granulating Wounds. By Frederic C. Skey, F. R. S. Assistant Surgeon to St Bartholomew's Hospital, &c. London, 1837. 8vo. Pp. 85.

Maladies des Jeunes Filles pendant l'epoque de l'accroissement. (Premier Memoire. De la Chlorose.) Par Bureaud Riofrey, Docteur en Medecine de la Faculté de Paris, &c. Paris, 1837. 8vo. Pp. 34.

Maladies des Organes de la Voix, Premier Memoire sur la Laryngite aigue ou Synanque Laryngienne. Par Bureaud Riofrey, D. M. &c. Paris, 1837. 8vo. Pp. 36.

A Probationary Essay on some circumstances to be considered in resorting to the operation of Bronchotomy. By George Stewart Newbigging, A. M. M. D. Edinburgh, 1837. 8vo. Pp. 59.

Inaugural Dissertation on the Effusion and Organization of Coagulable Lymph. By George Stewart Newbigging, A. M. Edinburgh, 1837. 8vo. Pp. 53.

Inaugural Dissertation on the Physiology and Pathology of the Brain; being an attempt to ascertain what portions of that organ are more immediately connected with motion, sensation, and intelligence. By John Hughes Bennett, President of the Royal Medical and Royal Physical Societies of Edinburgh. Edinburgh, 1837. 8vo. Pp. 79.

A Translation of the Pharmacopœia Londinensis of MDCCC.XXXVI, with Descriptive and explanatory Notes, on the Materia Medica, &c. By Thomas Castle, M. D. F. L. S. Consulting Physician to St John's British Hospital, Member of Trinity College, Cambridge. London, 1837. 12mo. Pp. 260.

First Principles of Medicine. By Archibald Billing, M.D. A. M. &c. Second edition. London, 1837. 8vo. Pp. 130.

An Examination of Phrenology, in two Lectures delivered to the Students of the Columbian College, Columbia. February, 1837. By Thomas Sewall, M. D., Professor of Anatomy and Physiology. Washington city, 1837. 8vo. Pp. 70.

A Practical Treatise on the Management and Diseases of Children. By Richard T. Evanson, M. D. Professor of Medicine, and Henry Maunsell, M. D. Professor of Midwifery in the Royal College of Surgeons in Ireland. Dublin, 1836. 12mo. Pp. 527.

On the Advantages of Exercise in some Spinal Deviations, addressed to Sir Benjamin Brodie, M. D., F. R. S. By A. M. Bureaud Riofrey, M. D., Member of several learned Societies in England, France, Belgium, &c. &c. &c. London, 1837. 8vo. Pp. 31.

Medical Relief for the labouring classes, on the principle of mutual Insurance. By H. W. Rumsey, one of the Surgeons of the Chesham Self-supporting Dispensary, and Fellow of the Royal Medical and Chirurgical Society. London, 1837. 12mo. Pp. 69.

A Bed-side Manual of Physical Diagnosis, applied to Diseases of the Lungs, Pleuræ, Heart, Vessels, Abdominal Viscera, and Uterus. By Charles Cowan, M. D., P. and E., &c. Translator of Louis on Phthisis. London 1836. 12mo. Pp. 60.

A Medico-Legal Treatise on Homicide by External Violence, with an account of the circumstances which modify the Medico-Legal characters of Injuries, and Exculpatory pleas. By Alexander Watson, Esq. Fellow of the Royal College of Surgeons, Edinburgh, and one of the Surgeons to the Royal Infirmary, &c. &c. Edinburgh, 1837. 8vo. Pp. 355.

Address of Earl Stanhope, President of the Medico-Botanical Society, for the Anniversary Meeting, January 16, 1837. London, 1837. 8vo. Pp. 32.

Symbolæ ad Talipedem varum cognoscendum. Dissertatio Inauguralis Medica quam in Universitate Literaria Friderica Guilielma pro summis in Medicina et Chirurgia honoribus, publice defendet. Auctor, W. J. Little, Anglus. Berolini, 1837. 4to. Pp. 80.

The Continental and British Medical Review, or Monthly Therapeutical Journal. Edited by A. M. Bureaud Riofrey, M. D. No. 2. April 1, 1837. No. 3, May. No. 4, June. No. 5, July. No. 6, August. London, 1837.

The Medico-Chirurgical Review and Journal of Practical Medicine, Edited by James Johnson, M. D., &c. New Series, No. 53, July 1837. No. 13, of a Decennial Series.

The British and Foreign Medical Review, or Quarterly Journal of Practical Medicine and Surgery. Edited by John Forbes, M. D., F. R. S.; and John Conolly, M. D. No. 7, July 1337.

The Southern Medical and Surgical Journal. Edited by Milton Antony, M. D., Professor of Obstetrics, &c. in the Medical College of the State of Georgia; and Joseph A. Eve, M. D., Professor of Therapeutics and Materia Medica in the Medical College of the State of Georgia. Vol. i. No. 12. (May 1837.) Augusta, Ga. 1837. 8vo. Pp. 705-768.

The American Journal of the Medical Sciences. Nos. 36, 38, and 39. (August 1836. February and May 1837.)

London Medical Gazette for the Session 1836–37, from No. 39. June 24, to No. 49. Sept. 2, 1837.

Comptes Rendus Hebdomadaires des Séances de l'Academie des Sciences, par MM. Les Secretaires Perpetuels. (1er Semestre 1837. Nos. 23 to 26, and 2d Semestre, 1837. Nos. 1 to 9.)

THE

EDINBURGH

MEDICAL AND SURGICAL JOURNAL.

1. JULY 1837.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Observations on the advantage of Healing by the first Intention the wound in the lateral operation for Lithotomy.* By JOHN CRICHTON, Esq. Surgeon, Dundee.

IN the Ninety-fifth Number of your Journal, April 1828, amid some observations on the various methods of removing urinary concretions from the bladder, I remarked there was one circumstance relative to the lateral operation, and that of no little importance, which had in great measure been overlooked by writers on the subject, namely, the propriety of accomplishing a cure by the first intention; that in a patient of good habit of body, where the incisions had been properly conducted, and the stone not very large and readily extracted, there was reason to think the attempt might frequently succeed, and thereby divest the operation of much of its accompanying distress; and that I had already witnessed the wound healed by the first intention in five instances, the urine passing by the urethra from the commencement, and continuing to do so, whereby the cures were remarkably expedited, and much annoyance from the dribbling of the urine by the wound avoided.

Since that period about forty cases have presented themselves. In the greater number, however, the chylopoietic viscera being unsound, and the habit much debilitated, the attempt to heal the wound by the first intention was not considered advisable; but in the following instances it will be seen the method succeeded admirably.

1. Mrs Low, aged about 30, from Tealing. After labouring under symptoms of *calculus vesicæ* upwards of twelve months, on the 26th September 1828, the urethra was slit up, and a large rough stone extracted in the course of a few seconds. The urine was retained and passed in full stream from the first, and she went home quite well eight days afterwards.

I may here remark, that the generally received opinion of lithotomy in females being followed by incontinence of urine, does not hold true so far as my experience goes. In this, as in every other case in which I have operated, the ability to retain the urine has remained unimpaired.

2. John Chalmers, aged 3, from Claverhouse. Affected from his birth with symptoms of *calculus*, which for some months have been extremely urgent, accompanied by tenesmus and protrusion of the inner coat of the rectum to a great extent, often to the size of a child's head.

On the 1st July 1829, a rough stone, weighing ten drachms, was readily enough extracted, although the gaining access to the bladder was rendered somewhat difficult by the great protrusion of the rectum, which was no sooner replaced than it again immediately protruded.

For some days he was quite well, diverting himself as if nothing had happened; but on the sixth day he became affected with severe pain and tension of the abdomen, in consequence of some stoppage to the passing the urine by the urethra. Immersion for some time in warm water removed the obstruction in the urethra, and procured immediate relief. On the following day he was enabled to leave his bed-room, and continued afterwards quite well.

3. James Cock, aged 3, from Lochee. Symptoms of *calculus vesicæ* from his birth. On the 31st August 1830, a rough stone, weighing two drachms, was easily and speedily removed by the lateral operation. Nine days afterwards was out with his mother enjoying the fresh air, and two days after that went home quite well.

4. William Laing, aged 4, from Forfar. Symptoms of *calculus* from his birth. 20th March 1831, was operated on, and a rough stone, weighing two drachms, extracted within the course of a minute—diverted himself with his playthings from the first, was out of bed at the fireside the following day, and on the eighth day was running about quite cured.

5. Benjamin Orrach, aged 65, from Kirriemuir. After suffering for many years under symptoms of *calculus vesicæ*, submitted himself to the lateral operation on the 20th May 1831,

and a stone, weighing five and a-half ounces, was quickly and easily extracted. Three days afterwards he was walking about with his clothes on, and fourteen days after the operation went home, a distance of eighteen miles, quite well.

6. William Both, aged about 40. After suffering severely for nine years under repeated attacks of *nephralgia* became affected with symptoms of *calculus vesicæ*, for the removal of which he submitted to the lateral operation on the 11th July 1831. The incisions were performed, and entrance into the bladder obtained in the course of a few seconds. But there occurred some difficulty in laying hold of the stone with the forceps, which, after several trials, were altogether withdrawn, and the stone turned out with the fore-finger of the right hand. The cause of the difficulty was the shape of the stone, which resembled a crown piece in size and form, the blades of the forceps rubbing over the surface instead of grasping it. Three days afterwards he was walking about with his clothes on; and eight days after the operation was busily employed from morning till night, in perfect health, in serving his customers in a small retail shop which he kept.

7. John Walton, aged 3½, from Forfar. Affected from his birth with symptoms of stone in the bladder. On the 6th April 1832, a rough stone, weighing three drachms, was removed by the lateral operation, within the minute. He diverted himself with his playthings from the first, and was taken home to Forfar eleven days after the operation in perfect health.

8. Murdoch M'Kenzie, aged 69, from Oathlaw, had been operated on by me twenty years before, and made a rapid recovery. He continued free of complaint for seventeen years, when symptoms of calculus again began to make their appearance. On the 16th June 1834, he again submitted to the operation, and a small stone was easily extracted within the minute. Four days afterwards he reported himself quite free of complaint, and continued so till he went home, a distance of twenty miles, some little time afterwards.

There was something remarkable in this case. The sounding was always attended with most exquisite pain, followed by severe rigors, terminating in acute fever for a day or two, yet after the operation itself neither rigors or fever followed.

9. John Costly, aged 3. Symptoms of calculus from his birth, was operated upon on the 17th June 1834, and a stone weighing two drachms speedily extracted. He suffered nothing, and was soon frisking about in good health.

10. David Beat, aged 57, from Balgay, a poor man affected with paraplegia, and for three years labouring under symptoms of *calculus vesicæ*. Submitted to the lateral operation on the

11th September 1834, and a rough stone, weighing one ounce, easily extracted in the course of one minute and a-half. He suffered nothing, and was taken home shortly afterwards cured of his calculus complaint.

11. George Alexander, aged 6, from Arbroath, after suffering severely for several years under symptoms of calculus, on the 2d November 1835, a rough stone, half an ounce in weight, was speedily extracted by the lateral operation. Went home quite well seventeen days afterwards.

12. M'Donald, aged 3, from Dawfield. Symptoms of calculus from his birth, underwent the lateral operation on the 12th December 1835, when a small rough stone was extracted in the course of two minutes, a little delay having been experienced by the protrusion of the rectum; suffered nothing, and was taken home shortly afterwards quite well.

13. Alexander M'Lean, aged 8, from Lochee, after suffering severely under symptoms of *calculus vesicæ* for eighteen months, a rough oval stone was removed by the lateral operation in the course of a minute and a-half. Slept the greater part of the time during the two first days, on the third sat by the fireside in an adjoining room, and eleven days after the operation was running about in perfect health.

Although these are the only cases in which the wound adhered at once, healing by the first intention, yet it is a gratifying subject of reflection to know that the others also made quick and perfect cures, notwithstanding the urine coming off at first and for some little time by the wound. Excepting in the case of one man, who died suddenly and unexpectedly from what appeared to be some affection of the heart, but which was no way connected with the operation, and in two or three others where the constitution had been previously completely broken down, and the urinary organs, from the kidneys downwards, were a mass of disease, and who submitted to the operation not with any expectation of prolonging life, but merely to alleviate suffering during the term of their existence, all the others recovered rapidly and perfectly.

In regard to the lately so much talked of method of drilling, rasping, crushing and breaking down the stone within the bladder, what are we to think, when, instead of its boasted uniform success, we hear it openly and broadly asserted by M. Velpeau, that out of eighty-three cases operated on by the most eminent lithotrists, thirty-eight died, and nineteen of the remainder had serious accidents.

Certainly any thing I myself have seen or had experience of in the matter affords little encouragement to believe that any instruments, however ingeniously contrived, can ever effect the removal of urinary concretions with so little suffering, risk of life, and injurious consequences as the simple, easy, and efficient mode of making an entrance into the bladder with the knife.

Some years ago Mr Costello, so much celebrated for his improvements and expertness in the use of these instruments, did me the honour of a visit, and was so kind to say that if I could furnish him with a patient he would be happy to exhibit his method. It so happened there was an elderly man under my care at the time, whom I prevailed on to submit. But no sooner had the process of injecting the bladder with tepid water commenced than he showed symptoms of excruciating pain, which became so unsupportable, that Mr Costello was at length forced altogether to desist.

The torture thus inflicted had such an effect upon the old man's mind, that he afterwards would listen to no suggestion for relief by any operation whatever.

In summer 1832, David Ogilvy, aged 14, who had laboured under symptoms of calculus from his birth, came here from Forfar for the purpose of submitting to an operation for relief.

In sounding, I struck the stone rather smartly, and was sensible of something giving way. Calling upon him along with some professional friends next morning, I learned he had passed a night of extreme torture, from the voiding of several fragments of the stone, which had gone to pieces by the stroke of the sound the preceding day. The occasional passing of fragments continued for several months, accompanied with more or less pain in proportion to their size.

About two years afterwards, he again made his appearance, suffering as before, under the symptoms of calculus, and the urine depositing lithic acid, along with thick glairy mucus in great abundance.

On the 27th May 1834, I removed a rough stone, weighing two ounces, by the lateral operation, within two minutes. He suffered nothing, and although the cure was not effected altogether by the first intention, the urine coming off partly by the wound for some days, yet he was walking about out of doors within the fortnight quite well, and went home to Forfar a few days afterwards.

In November 1836, I sounded Mr James Robb, an old man of a broken down constitution, who had been for some time labouring under symptoms of *calculus vesicæ*. In this case also, the stone was broken down by a stroke of the sound. The voidance of the fragments was accompanied by extreme torture, occasioning also swelling and inflammation of the testicles, all tending to embitter and shorten the remainder of his existence.

I may also mention, that I was called upon some two years ago, to visit a poor emaciated object, his name I do not at present recollect, who had come from Kirkaldy to put himself under my care.

He informed me that twelve months before, he had been admitted into the Edinburgh Infirmary labouring under symptoms of stone, but otherwise stout and in good health, and had been there for several weeks subjected to very great suffering in repeated attempts to break down and remove the stone, without employing the knife. He further added, that after his return home, he continued for several months to void fragments, one of which stuck in the passage for several days, occasioning unspeakable torture, and well nigh depriving him of life; and that although for several months past, he had ceased to pass any, his sufferings were still very great, as his emaciated and ghastly appearance abundantly testified, and that he was quite willing, and would be happy to submit to any *proper* operation to obtain relief.

I sounded him with great care oftener than once, until satisfied there was no stone in the bladder, and that his sufferings were merely the consequence of injuries sustained by the urinary organs in the harsh methods resorted to for the cure.

The circumstances attending these four cases, coupled with various others of a similar and much more appalling nature, reported to me by eye-witnesses, form a striking contrast to the method by incision, which, while it subjects the patient to very little pain, accomplishes its object at once, leaving the mind quite at ease, in the knowledge that every thing is finished, and that there is nothing further to be inflicted.

Dundee, 10*th May* 1837.

Art. II.—*Cases of Tumour*. By Dr Douglas Maclagan, F. R. C. S. E., &c. one of the Medical Officers of the New Town Dispensary of Edinburgh. (Read before the Medico-Chirurgical Society, February 8th 1837.)

Case of Tumour of the back recurring after extirpation.—Jane E——, aged 22, of a scrofulous family, of a spare habit of body, but in the enjoyment of good health, applied in February 1832 for advice regarding a tumour situated on the left lumbar region, about an inch from the spine. She was first sensible of its existence about three years before, when it was of about the size of a chestnut. For two years it grew very slowly, but during the last twelve months it had increased more rapidly in bulk. It gave her little uneasiness, except that its position exposed it to considerable irritation from her corsets. At the time that she presented herself for advice, it had attained the size of a jargonelle pear. It had a firm but somewhat elastic feel, and was quite moveable on the subjacent parts. Immediately below the tumour a portion of the skin had become hardened and thickened to the extent of about half-an-inch; it was free from pain with or without pressure, and had acquired no adhesions to the surrounding parts.

The tumour and portion of diseased skin were removed by my father in the usual manner, in presence of Dr Gairdner and myself. The edges of part of the wound were brought together and united readily, and the space from which the skin was removed was filled up by granulation. There was very little bleeding at the time of the operation, and in about six weeks the girl had returned to service.

On examining the part removed, it was found to be possessed of most of the characters of a simple fibrous tumour. In shape and size it was very like a hen's egg. It was of a semitransparent greyish colour, slightly tinged with pink, moderately elastic and firm, and was inclosed in a distinct capsule. It was not the least fatty or greasy, and, but for its subsequent history, would have been regarded as a simple fibrous tumour. The thickened portion of the skin exhibited several bands of a pale colour traversing its substance, which was of pretty firm consistence, but yielded readily to the knife.

After her recovery the girl's health continued good, and she remained at service. She was free from all thoracic or abdominal complaints, and never suffered from menstrual irregularity. After the lapse of about twelve months the disease returned in the upper part of the cicatrix. She did not, however, make that known to any one till February 1834, two years after the former operation.

At that time there were three little tumours on the girl's loins. Of these, two were like split chestnuts, rather hard, but with some elasticity, and were situated in the cicatrix of the former operation; the other, which did not grow from the scar, and was covered with healthy skin, was about twice the size of either of the others, and had less of the firmness and more elasticity. The whole was perfectly moveable on the subjacent parts, and as the patient's health was favourable for an operation, and she herself anxious for its removal, I extirpated the whole by including it within two semilunar incisions. A few small vessels were tied at the time of the operation, and some blood was lost the day after from the slipping of one of the ligatures; part of the incision was healed by the first intention and united kindly, the rest was filled up by the more tardy process of granulation. In ten weeks the girl again returned to service apparently in perfect health.

The extirpated mass bore a striking resemblance to that previously removed. The two smaller tumours appeared to represent the thickened integument of the former occasion, whilst the detached one above was evidently identical with the fibrous tissue previously described. It had rather a yellowish tinge, and was less transparent than formerly, which circumstances to a certain degree obscured its anatomical characters, but its slightly fibrous texture when minutely examined, its shape and elastic feel easily showed it to be identical with that formerly removed. It seems not improbable that, had it been allowed to grow for a longer period, it might have become more transparent and more decidedly fibrous as it advanced.

My patient remained at service for upwards of another year, in the enjoyment of perfect health. Betwixt twelve and eighteen months from the period of the last operation, the tumour, for the third time, returned in the upper part of the old cicatrix, but, from the fear of another operation, she concealed it for a year and a-half. It had by this time attained the bulk of a large orange, and was thus, from its size alone, a source of annoyance, as it was constantly exposed to friction from the edge of her corsets. About the end of August last, the skin, which had been considerably stretched by the increase of the swelling, ulcerated, but the tumour showed no disposition to fungate, nor did it then ever bleed more than a few drops when the cloths were removed from it. I again removed the tumour, taking away about half-an-inch of skin round it on each side, exposing the lumbar fascia and part of the *latissimus dorsi*. Six small vessels were tied, and as there was no skin saved to cover the wound, it was dressed at the time with scraped lint, and has granulated kindly.

On examining the tumour this time, it was evidently the same morbid tissue as before in a more advanced state. It had the same elastic feel and fibrous appearance, and the semitransparent pinkish gray colour was the same as in the original tumour. Below the place where the skin had ulcerated, the morbid tissue was of rather softer consistence, and had a more decidedly gray tinge than the rest of the tumour.

The mass was composed of several lobes or compartments, separated from each other by partitions of cellular substance; these were quite free from hardness or any approach to scirrhus, and were only sufficiently marked to show that the tumour did consist of several compartments. It is worthy of remark, that on this occasion all the integument seemed to be in a perfectly normal condition, the whole mass consisting of the fibrous elastic tissue which seems to constitute the essential character of the tumour.

The above case appears to be in several points worthy of observation, as there seems to be something unusual in the history of this tumour. Having felt great difficulty in referring it distinctly to any of the known species of morbid growths, I showed it to several medical friends, amongst others to Professor Syme, who suggested that it might be a variety of morbid growth not distinctly recognized by authors. Being led by this to compare it with some of the more ordinary forms of diseased structure, and not being able to find any description of tumour with which it exactly corresponds, I beg leave shortly to state what seem to be the distinctive peculiarities of the present case.

There is nothing in the anatomical characters of the tumour which, independently of other cirumstances, would be sufficient to distinguish it. It may be stated shortly, as being distinctly circumscribed, somewhat firm, and at the same time elastic to the touch, and free alike from any feeling of fluctuation or of hardness. When cut into it is found to be of a distinctly fibrous tissue, to be enclosed in a capsule of cellular membrane, and, when in its more advanced state, it is seen to consist of several lobes or compartments. When fresh, it is semitransparent, of a grayish colour, slightly tinged with pink, and it seems to be but scantily supplied with blood-vessels. Its chief peculiarities, however, appear to be in the history of its progress. It is seen occurring in a young individual, its growth is unattended with any great local suffering, and with no constitutional irritation, and the patient is free from the sallow cachectic appearance which characterizes those who labour under the morbid growths usually termed malignant. If the tumour be extirpated, the wound heals readily, and health is speedily regained. Thus if in these circumstances the surgeon loses sight of the case, he would be led to suppose, and apparently on good grounds, that he had extirpated a simple fibrous tumour, which in all probability would never trouble his patient again. But it requires a prolonged observation of the case to show its real nature, and to develope its most characteristic feature, which seems to be its tendency to return in or near the spot from which it has been removed. It seems to be a purely local disease, as is indicated by the soundness of the general health, and its not appearing in other parts of the body. When it recurs in its old locality, it shews itself not under a more aggravated form, but in its original condition, and runs it course precisely as before; but it is to be feared, from a review of the following cases that the tendency to recurrence increases in time, and that the extension of the disease to the surrounding textures eventually destroys the patient. In short, the combination of circumstances which distinguish it are, its having a simple fibrous structure, its obstinately recurring after extirpation in the same place and under the same form, and its want of tendency, at least in the early stage, to destroy the general health or to attack other parts of the body.

In the first volume of Mr Allan's System of Surgery, p. 264, a case is given at some length as an instance of *fungus hæmatodes*, which I conceive rather to be analogous to that just related. It is that of a young man who had a tumour on his left haunch, which was five times extirpated by the surgeons of the Royal Infirmary here, but eventually carried him off by its extension to the deeper parts. Mr Allan thus concludes his account of the case. "The man lived about thirteen years from the commencement of the tumour, and seven years eight months from the time it was first operated on; and, notwithstanding the absence of visceral disease, and the length of time it subsisted, its structure and external marks, together with its invincible obstinacy, declare it to be true *fungus hæmatodes*."

The circumstances mentioned by Mr Allan in the above sentence, viz. the absence of disease in other parts of the body, and the protracted duration of the complaint, are unfavourable to the supposition of its being true *fungus hæmatodes*. The experience of those who have observed and written on this destructive malady has shown that death generally takes place from extension of the disease, or its recurrence in other parts of the body within a much shorter period.

Dr Kerr * says, "the period to which life has been limited after the development of this terrible disease has rarely exceeded two years, whether its removal has been attempted by extirpation of the tumour, or by every other expedient adopted consistent with the circumstances of the case and the resources of science. It generally proves fatal in a much shorter space of time, and death seems to have been too often expedited by the removal of the local disease even to the extent of extirpation of the part, or amputation of the limb on which it may have been situated."

The following view of the duration of the cases recounted by Mr Hey of Leeds, who first described the disease under the name of *fungus hæmatodes*, and by Mr Langstaff, who has related a great many instances of the disease,† will serve to confirm Dr Kerr's statement, and to strengthen the disbelief of the identity of Mr Allan's case with *fungus hæmatodes.*

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* Cyclopædia of Practical Medicine, p. 299.

† London Medico-Chirurgical Transactions, Vol. viii. and ix.

Of seven fatal cases recorded by Mr Hey, two lived about three years. The others all died within twelve months from the first appearance of the disease.

Of Mr Langstaff's nine cases of external *fungus hæmatodes,* all fatal, one lived seven years, during three of which the tumour showed no symptoms of malignity, one lived two years and seven months, one lived twenty-three months, one eighteen months, and all the rest died within the year.

The duration of Mr Allan's case to thirteen years is in singular contrast with those of Messrs Hey and Langstaff.

A portion of the tumour is preserved in the Museum of the College of Surgeons, and presents a very different appearance from the cases of true *fungus hæmatodes* in that collection. In paticular, its fibrous structure is much more apparent. I feel strengthened in my view of the nature of this tumour, by a note of the late conservator of the museum, Dr Knox, in the MS. catalogue of the museum, which states, that on the occasion of his making a section of the tumour, he had found it to contain spiculae of bone, which, so far as I know, has not been met with in cases of true *fungus hæmatodes.* Perhaps also in Mr Allan's case, the tumour may have assumed a greater appearance of malignity than it would otherwise have done, from an injury inflicted on it by the man's falling down stairs in the early part of the disease.

Mr Allan likewise mentions a circumstance which I have observed in the case of the girl E—— viz. the great rapidity with which, after each operation, the granulating process completed the cure of the wound.

By the kindness of Professor Syme, I am enabled to subjoin the following cases, which appear to be of the same nature as that narrated above. I give them in the words of the gentlemen by whom they were communicated to Professor Syme.

Case by Dr Donald of Macduff.

I have excised three tumours from Mr ——'s left shoulder since July 1835. He observed the first one only about the middle of June, when it had attained considerable size. It was situated immediately below the outer end of the clavicle, quite moveable, the skin over it perfectly sound, nearly as large as a hen's egg when taken out, and free from pain. I removed it on 7th July 1835, by making a single longitudinal incision in the direction of the clavicle, and then dissecting out the tumour. There were a few small detached masses of fatty substance around it, which were carefully removed, and the edges of the wound brought together by adhesive straps. Two or three small vessels were tied, and the wound healed favourably; but it was not long (I think about the end of August) till another tumour was observed growing one inch and a-half below the cicatrix of the former wound. From his reluctance to submit to another operation, and anxiety to attempt to disperse it by local applications, a variety of stimulating and discutient ointments and plasters were applied, attention at the same time being paid to his general health: but the tumour still increased, and, latterly, it grew very fast, so that by 25th January 1836, when I removed it, it had attained considerable size, extending up beyond the former cicatrix. When the mass was removed, I should think it would have weighed from four to six ounces. The tumour was moveable, but the skin over it was inflamed and unhealthy-looking. I therefore made two semi-elliptical incisions, including as much of the skin as appeared diseased, and dissected out the tumour; but after that we discovered numerous round granules, of fatty substance, of various sizes, from that of a small pea to a garden bean, all around, many of them so firmly attached to the skin that we had to remove considerable portions of it, and thus we left a surface of about two square inches to be filled up by granulation. We carefully removed every particle that seemed at all suspicious. During the operation a good deal of blood oozed out, but only one or two vessels of some size required to be tied. The wound healed kindly, but it was only a short time healed when a third tumour began to appear at a little distance from the edge of the cicatrix towards the sternum. This third one was removed on 20th May, when it had attained only the size of a pigeon's egg. The skin over it was diseased, and removed along with it; one vessel only was tied. This tumour also was surrounded with several distinct small granules of fatty substance.

The appearance of all the tumours was the same, viz. that of fat, but of much harder consistence. When cut into, numerous white lines were seen running from the centre towards the circumference. The centre of all the tumours, but more particularly of the largest one, was of cartilaginous hardness, the knife in cutting it rasping as it would do in cutting pretty firm cartilage.

I forgot to mention, that during the growth of the second tumour, after it had attained some size, he complained a good deal of shooting pains in the shoulder, more particularly during the night when in bed. He had also some pain with the last one.

Macduff, July 29, 1836. Wm. Donald.

Case by Dr Wannan of Arbroath.

The young woman, the subject of the following narrative, was of strumous diathesis. She had at six years of age, scarlatina, which left as a sequela an inflammation of the knee-joint. This, after years of painful and dangerous suffering, I am informed, suppurated, and left when it healed an anchylosed joint, on account of which she always required the use of a crutch. The limb was of stunted size, but otherwise she had a healthy appearance.

In March 1834, Margaret A —— aged 16, applied to me on account of a tumour near the top of the dorsal vertebræ, on the right side of their spinous processes, about the size of a large walnut, somewhat painful, aggravated on pressure, and occasionally shooting. It was attached to the substance underneath, but the skin over it was natural in colour, and unattached. It had been four years in attaining the present size. Viewing it, from the nature of her constitution, to be scrofulous, the suitable remedies were prescribed, viz. *leeching* and *iodine*, both externally and internally. No marked benefit was observable from this treatment although persevered in for several months. By the end of the year the tumour had considerably increased; the teguments became tense and inflamed, with lancinating pains and other symptoms indicating disease of a more suspicious character. In the early part of the ensuing year the morbid action greatly increased; the skin ulcerated, and gave exit to ill formed matter and acrid sanies. No diminution of the tumour took place by the discharge, on the contrary the fleshy mass was observed to increase, and the ulcerated integuments to retract the more. By the month of March, it may have measured more than four inches longitudinally, and about three broad. An operation for its removal was urgently recommended to the patient, to which she at last consented.

On the 12th March, with the assistance of Drs Stevenson and Traill, I removed the whole of the apparent tumour and diseased integuments. In the course of eight or ten days, a copious suppuration took place from the wound, and luxuriant healthy-looking granulations sprung up. Her health, which had greatly suffered, now quickly improved, and to all appearance, she was likely speedily to get quite well. On cutting into the removed tumour, it had a granulated appearance, and rasped before the edge of the scalpel, and otherwise corresponded to the character of a scirrhous tumour. For some weeks, the sore went on well, but when it was nearly healed, a small tumour was observed to show itself over the scapula of the left side, about three inches from the edge of the cicatrix. It rapidly increased, and it was thought expedient likewise to remove it. Suppuration and granulations speedily, I mean in unusually short time, covered the surface of the sore, and to all appearances the disease was completely extirpated. This second operation was on the 10th May, and by the time the wound was nearly cicatrized the cicatrix of the first wound began to thicken itself, which speedily increased; and in consultation with the before-mentioned gentlemen, it was thought the most advisable plan to remove the whole of the cicatrix with a bold and deep incision, and to fill the wound with caddis, and allow it slowly to heal. This third operation was accordingly done on the 7th of June. It is here worthy of remark, how much the patient's general health improved by each successive operation; for when the preternatural hardness indicative of the disease always recurred, her health showed signs of suffering, but by the application of the knife, the source of irritation was, *pro tempore*, removed, and she got comparatively well. We were hopeful that this last operation would have completely relieved the patient of the disease, and when the granulations had nearly attained the level of the surrounding skin, we endeavoured to repress their luxuriance, by at first, mild escharotics, as burnt alum, and afterwards lunar caustic, but these seemed to stimulate them to increased growth; and the idea of using the actual cautery occurred to us as the most likely to benefit the patient, by eradicating the disease. I therefore, on 9th July, removed with the scalpel, the whole parts included in the original cicatrices, cut down by the side of the spinous processes of the vertebræ, and nipt portions of them off with the bone forceps; however, so deeply was the diseased structure now situated, that the chance of getting to the bottom of it was at an end either with the scalpel or the actual cautery, we therefore desisted from farther meddling in despair, and finished the operation by plugging the wound with caddis and burnt alum. Ere long the granulations attained the level of the surrounding skin, and by and by jutted out in the character of a fungoid tumour. In this state, she was sent to the Edinburgh Royal Infirmary, recommended to your care. You did not, however, judge proper to do more than had been done, and remitted her again to Arbroath. The sequel of her history is quickly told. The fungus went on still increasing, until about the size of half a melon, when it became stationary. Then layer after layer sphacelated. From the surface, a copious and very fœtid sanies discharged; hectic fever supervened, and she died on 5th November.

No examination of the body was made.

The history of this case may be briefly summed up, thus: After nearly five years growth, a tumour was removed on 12th March 1835, first operation; 10th May, second operation; 7th June, third operation; 9th July, fourth operation; 5th November, death.

Case of diseased Mamma—Cysts containing Cholesterine.—Mrs B. aged 37, has never had any family, and, with the exception of occasional slight attacks of leucorrhœa, has always enjoyed good health. She applied for advice at the New Town Dispensary, on account of a tumour which she had discovered about two months previously in the right mamma. When she first observed it, it was nearly as large as at the time of her presenting herself at the Dispensary. It was then about as large as an orange, situated on the upper and outer side of the breast towards the axilla, and seemed, though not very distinctly, to involve the whole mamma. It felt hard and firm, and was quite moveable on the subjacent parts. There was no affection of any of the axillary glands, and the general health remained good. She thought that the tumour had rather enlarged since its discovery, which circumstance had somewhat alarmed her. She rarely felt any pain in it, experiencing only occasionally a dull sense of weight, never having any pain of a lancinating character. The tumour was leeched and blistered, and had discutient lotions applied. She took for some time the solution of hydriodate of potassa with iodine, but no impression was made on the bulk of the tumour by any of these means. With the concurrent advice of Mr Syme and Dr Maclagan, I extirpated the whole mamma in the usual way; the patient never had a bad symptom, and was out in three weeks.

On examining the removed tumour, it was found to be a case of cystic disease of the mamma. The tumour, which had chiefly occupied our attention, was found to consist of one large cyst, about as large as a pigeon's egg, in the substance of the mamma at its upper part, and one or two smaller ones around it of about the size of horse beans. The lower part of the mamma contained a few cysts, about the size of barleycorns, scattered through its whole substance. In other respects the mammary tissue was healthy.

On cutting into the larger cyst in presence of the Anatomical Society, upwards of an ounce of a fawn-coloured fluid escaped, in which there floated a quantity of minute bright scales, which had all the appearance of cholesterine. A smaller cyst, about the size of a horse bean, was also opened, and in it was found a quantity of what appeared at once to be cholesterine, mixed with just enough of fluid to render it of a melicerous consistence. The nature of this substance was satisfactorily shown by its dissolving in boiling alcohol, and crystallizing in the usual manner on cooling.

ART. III.—*The Effect of Tartaric Acid on Morbid accumulations of Mucus in the Stomach and Bowels.* By Mr JAMES MORGAN, Surgeon, Port-Glasgow.

BY the term "morbid accumulation of mucus," I mean to designate those collections of mucus which are not of a vitiated nature, but which produce morbid effects, merely by the large quantities in which they are secreted and accumulate. Such accumulations in the stomach and bowels are a very frequent complication of disease in a cold moist climate, and, by sheathing the internal surface of the intestinal canal, prevent the perfect digestion of food, and protect the bowels from the salutary stimulus of medicine.

Such accumulations are noticed by several authors in treating of those diseases in which they are apt to occur. Dr Barlow, in his Essay on *Gastrodynia*, in the Cyclopædia of Practical Medicine, notices accumulations of mucus in the stomach as a frequent cause of that painful affection, and recommends the administration of calomel and antimonial powder as the most efficient means of removing them; Mr W. E. Daniell of Savannah, in his paper, published in the first volume of the Lancet, p. 116, notices accumulations of mucus in the bowels, as a cause of obstinate constipation, and recommends large doses of charcoal powder, as it, he thinks, unites with and removes the mucus; and Dr Todd, in his excellent paper on Indigestion, in the Cyclopædia of Practical Medicine, notices it as a troublesome complication of follicular gastric dyspepsia. Dr Annesley, in his *post mortem* examinations of the intestines of persons who had died of Asiatic cholera, noticed that they were thickly lined with viscid mucus. He conceived that they would from this circumstance be insensible during life to the stimulus of medicine, and has the merit of having instituted many experiments to discover the best solvent for intestinal mucus. He announces as the result, that cystic bile is the only natural secretion which dissolves the mucus obtained from the dead body, and that tartaric acid is the best artificial solvent. (Vide Annesley on Diseases of India.)

I have observed that accumulations of mucus in the intestines are a common and very troublesome complication of the following diseases, as well as of those already mentioned: viz. epidemic catarrh, *phthisis*, *bronchitis*, *pertussis*, croup, dysentery, worms, hæmorrhoids, some fevers, and cynanche. In the first two, the *bronchia*, tonsils, and mucous coat of the intestines are all sources of the increased secretion of mucus. In the next three the *bronchia* alone are the sources from which it is derived, and therefore this complication is more common in children, as they swallow instead of expectorating the mucus. This is also the case in cynanche, the mucus being supplied by the tonsils. In the other four diseases, the mucus seems to be supplied by the lining membrane of the stomach and bowels, as is the case in gastrodynia, constipation, and cholera. Besides preventing the digestion of food, and the proper action of medicine, accumulations of mucus in the intestines cause various uneasy sensations, among which, general coldness of the surface, particularly of the extremities, and nausea are the most frequent and most distressing.

My attention was first directed to this subject by the prevalence of epidemic catarrh, among the crew of the shipping lying in Whampoa Reach, near Canton, during the winter of 1831.

The crew of the ship to which I belonged, the Duke of Roxburgh, was, as far as I could learn, the first attacked, though I could discover nothing peculiar in the position of the ship to account for this being the case. The captain was seized with the premonitory symptoms on the 25th September, after being wetted in the boat coming down from Canton; several of the ship's company were seized on the 29th; and by the 12th of October all the ship's company, including myself, except the chief officer and one man, were confined to bed.

On referring to my notes I find that the symptoms were similar to those which have distinguished the epidemic catarrh which has prevailed in this country during the last winter, the symptoms continuing comparatively slight during the first three days, and till after that time none of the men complained to me, but soon becoming much more violent than any I have witnessed in this country. In many cases the headach was so severe as to produce violent delirium; in others, the dyspnœa was so great as to threaten instant suffocation. In these cases, venesection was the only remedy which gave relief, and indeed I had recourse to it in every case, (on board our own ship,) except my own. But, as has been observed in this country, it by no means cured the complaint. Laxative medicine was followed by no satisfactory effects. An ounce of salts, and a grain of tartar-emetic produced a few very scanty watery stools; a dose of senna scanty black stools; a scruple of calomel one natural stool at most; and castor oil, though the most efficacious purgative, producing very little effect; pills produced severe tormina, and acted but slightly as a laxative.

It was not till after I was attacked myself that Dr Annesley's remark recurred to my memory. I had noticed that every thing which was vomited or passed *per anum* was mixed with viscid mucus, and considered that it would be necessary to dissolve this mucus before the bowels could be properly acted on by medicine. Considering also that tartaric acid might not be a safe remedy in the irritable state of the stomach which accompanies the complaint, I thought of the supertartrate of potass, which contains a proportion of free tartaric acid. But I further inferred, that after dissolving the mucus it would be necessary to carry it off, and produce a free discharge of bile. I therefore had recourse to the employment of a prescription, which is common in Edinburgh, but which I had hitherto found useless in tropical climates, viz. five grains of calomel with a drachm of the compound powder of jalap. This operated satisfactorily in all the cases, and, followed by a dose of castor oil, effected a complete cure in many of them. After my recovery I got the medical charge of several country ships manned by Lascars, and found that one laxative powder, and one dose of castor oil, seldom failed to effect a cure in the cases of influenza which occurred on board of them, within three days, by producing generally about a dozen copious watery stools, mixed with an immense quantity of viscid mucus.

After returning from China I settled in Greenock, and was in practice there during the prevalence of epidemic catarrh in the summer of 1833. That epidemic was characterised by a very copious secretion of mucus, and the calomel and compound powder of jalap was very efficacious; but as I had noticed the good effects of vomiting, I added five grains of antimonial powder to each dose; and a powder formed of these ingredients, if I might rely upon the statements of the patients, in many instances, produced instant vomiting of a large quantity of mucus mixed with the ingesta, followed by upwards of a dozen copious alvine evacuations within the space of two hours. If a dose of castor oil was taken when the operation of the powder had ceased, it seldom failed to perfect the cure within twenty-four hours, and very few cases occurred in my practice in which I required to give any other medicine. The catarrh which has been epidemic in this neighbourhood during the past winter has been rather dry, the secretion of mucus being comparatively scanty; but I have found, that in almost all cases where one of these powders and a dose of castor oil were taken, within three days after the first appearance of the symptoms, and the patient confined himself to the house during their operation, and for twenty-four hours afterwards, that time sufficed for perfecting a cure, and in every instance I found it the most efficacious emetic and purgative which could be administered. After repeated trials I can affirm, that the compound powder of jalap alone is much more efficacious than the calomel and antimonial powder are, without the compound powder.

I generally administer the powder in the form of a bolus, mixed into a thin paste with jelly, syrup, or brown sugar and water, adapting the dose to the sex and age. I find that the most delicate adult female may take two scruples of the compound powder of jalap, three grains of calomel, and three grains of antimonial powder, and that an infant or old person may take a dose of the same ingredients proportioned to their age and strength without any danger of hypercartharsis. One circumstance, which indicates the adaptation of the medicine to the disease, is that the same dose which in an individual suffering under an attack of influenza, will produce six or eight copious stools, will in the same individual, when in ordinary health, produce only one or two.

A bolus is far from an elegant form of exhibiting medicine, and where this has to be studied, the calomel and antimonial powder may be made into pills with *Extract. Taraxaci*, and the compound powder into a draught with electuary of senna and cinnamon water ; but I have found no form so efficacious as the bolus.

The effects of senna and salts in influenza are very much increased by adding a teaspoonful of cream of tartar to each dose ; and ipecacuan and opium lozenges are much more beneficial to the cough, if the use of them is preceded by that of the confections generally termed acidulated drops, which are acidulated with tartaric acid. Dr Annesley recommends drinks acidulated with tartaric acid for quenching the thirst in cholera, and I have found imperial the most useful in influenza, but seldom necessary after a powder had been taken. As I have restricted myself, by the title of this paper, to the consideration of the use of tartaric acid, alone or in combination with other medicines, in removing accumulations of mucus from the intestines, I shall not say anything of other remedies for influenza, but proceed to the consideration of the other diseases, in which morbid accumulations of mucus occur.

Cholera Morbus.—I have had but few opportunities of trying the effect of tartaric acid in this disease, but the result of these trials has been highly satisfactory. After leaving Whampoa Reach, the ship Duke of Roxburgh anchored at Lintin on the 27th December 1831. On the following day, I was requested by the commander of the American ship Lintin, of Lintin, to go on board, and see some of his men who had been taken suddenly ill.

I found three men suffering under the usual symptoms of Asiatic cholera. They had been ill about two hours, but spasms did not occur till after I saw them, and then only in two ;—the other, a Portuguese, seemed to be sinking without spasm. I opened a vein in each of their arms, but got no blood. A quarter of an hour after each of them had taken a dose of calomel and compound powder of jalap, the Portuguese vomited bile freely, perspired copiously, and was so completely relieved that no other remedy was required; but the two others, who were stouter men, only became a little warmer. I bled them, during which operation they both vomited freely, first mucus and then bile, after which they perspired and fell asleep, being completely relieved. They all returned to duty within three days.

Before I commenced practice in Greenock, the epidemic cholera had almost ceased, so that I saw only two cases. One of them was far gone before I saw the patient, and though the blood flowed pretty freely, he sank during the night without spasms. The other vomited copiously, after taking calomel and compound powder of jalap, and the blood flowed freely from his arm, so that he soon recovered. I saw two cases in this town last summer, and the same remedies effected a cure within a week.

In gastrodynia, and all cases of dyspepsia, which are complicated by accumulations of mucus in the stomach, the emetic power of ipecacuan is very much increased, by the addition of a few grains of cream of tartar to each dose, and calomel with the compound powder of jalap, forms the most powerful purgative. The same remark applies to cases of sore throat, enlarged tonsils, and phthisis; but in pertussis, bronchitis, and croup, I have found the following syrup the best emetic, as it may be given in such a way as to produce vomiting, only when the mucus has accumulated to a certain extent, and the patient may have all the benefits of the antiphlogistic influence of the antimony.

℞ *Tartritis Antimonii* gr. i.; *Acidi Tartarici* gr. iii.; *Syrupi simplicis; aquæ fontanæ ana f.* ℥ss. M.

The dose is a teaspoonful for an infant, and a table-spoonful for an adult. It has the farther advantage of having an agreeable appearance and taste. When there is not more than the natural quantity of mucus in the stomach, the tartaric acid seems to diminish the emetic power of the antimony, and perhaps may aid in producing endurance of the medicine; but where, on the contrary, the secretion of mucus is superabundant, it assists materially in producing vomiting, so much so that I knew a case of a child four years of age, who was not even nauseated by three large doses of ipecacuan, and a grain and a half of tartar emetic, but vomited freely soon after taking half a teaspoonful of cream of tartar.

Calomel and the compound of powder jalap combined produce free alvine evacuations, unaccompanied by straining, in dysentery and hæmorrhoids, and assist materially in curing these diseases.

By dissolving the mucus in which worms are imbedded, they act powerfully as anthelmintics.

In measles, and those fevers which some authors have termed "mucous fevers," which are characterized by a morbidly increased secretion of mucus, the powder I have recommended for influenza affords great relief, and in many cases of intermittent fever, I have found calomel, with the compound powder of jalap, and low diet, almost the only remedies required.

I have already mentioned, that when last in China, the medical charge of several country ships was committed to me. Very few of the Lascars in these crews escaped an attack of influenza, and most of them were subsequently attacked by intermittent fever. By persevering in the use of calomel and the compound powder of jalap, I effected a cure in every case, and recollect only one in which so many as six doses were required. As my time for visiting the country ships was irregular, the dose was administered at the time of my visit to each of those who were complaining, without observing whether it was during the interval or paroxysm of an attack. The cases in which these medicines alone effected a cure must have amounted to about a hundred, and no man was considered cured till he had done duty uninterruptedly for several days. The cases of relapse were very few, and generally traceable to some excess, or exposure to the inclemency of the weather. Among Europeans, both in our own ship and in the others which I was attending, intermittent fever was much more obstinate, but venesection during the cold stage, the administration of calomel with the compound powder of jalap, and low diet, were the only remedies required. Only two or three cases in my practice exceeded eight days in duration, after they came under treatment.

Since the month of July 1825, I have practised bleeding during the cold stage of every fever, whether intermittent or continued, in which I had an opportunity of doing so, and in every case with the most beneficial effects. But I must do Dr Mackintosh the justice to observe, that this practice was suggested to me by a remark he made in the Royal Medical Society, during the spring of that year, and which was repeated to me by a friend. But I was not aware till more than two years after, that Dr Mackintosh had commenced that practice in intermittents.

During the Summer of 1828, I wrote an essay on this subject, which is now, I believe, in the possession of a friend, a Medical Officer in the Honourable East India Company's Service. My views both of the theory and practice differ materially from those of Dr Mackintosh, as set forth in the last edition of his Practice of Physic.

Art. IV.—*On the Voluntary and Instinctive Actions of Living Beings.* By William B. Carpenter, M. R. C. S. Senior President of the Royal Medical Society, and President of the Royal Physical Society. *

The inquiry on which I am about to enter derives a peculiar degree of interest from the extent of the field embraced by it, and the importance of its character; whilst the complicated nature of the relations subsisting between its objects renders it one of no ordinary difficulty. This difficulty has, I think, been much increased, by the erroneous method in which the investigation has usually been prosecuted, as well as by the number of exploded theories, whose shades still hover in the darkness that envelopes the subject; and these have been productive of injurious effects, by the doubt which they have often cast over established facts, and by the number of fallacious statements which they have almost inseparably mixed with truth. I am far from supposing that it is in my power to shed new light upon the questions I am about to discuss. I have little claim to novelty in any of the views I shall bring forward, since they have almost all been propounded by different authors, of more or less reputation in their respective departments; and the object I have chiefly in view is to show in what manner they may be harmonized and connected, so as to form one uniform system.

Before entering upon the investigation, however, it may be advantageous to make a few remarks on the comparative value of observation and experiment, in the elucidation of the causes of the phenomena exhibited by living beings. By *observation*, we take cognizance of the sequences of these phenomena as presented to us by nature; but their complication too often renders it impossible to analyse them with such clearness as to be able to attribute each effect to its peculiar cause. Hence the *experimental* inquirer endeavours to arrange his causes into new combinations, in such a manner, as to produce a different set of results by the comparison of which, the *vera causa* of each effect may be arrived at by the method of exclusion. And it will be remarked, that observation is here necessary to take advantage of the new set of phenomena presented by experiments; and the inductive processes founded upon each are precisely similar. But there are obvious limits to the employment of experiment in the investigation of the laws of vitality. The physiologist has by no means the same power of selecting and arranging his causes, for the purpose of observing their results, as that which is possessed by the chemist or the mechanician. If he take away an essential part of a living structure, it no longer exhibits even a trace of those properties of which it is his object to ascertain the laws; and, on the other hand, he fails in all his attempts to produce any of the phenomena of vitality by new combinations of inorganic elements. Here, however, a judicious and careful system of observation will almost supply the place of experiment; for the ever-varying forms of organised beings by which we are surrounded, and the constantly changing conditions in which they exist, present us with such numerous and different combinations of causes and effects, that it must be the fault of our mode of study, if we do not arrive at some tolerably definite conclusions as to their mutual relations. In our investigation of the laws of vital phenomena, therefore, we may advantageously commence with the observation of those instances in which the results are presented to us in the simplest form; and if we can thus attain a knowledge of their *veræ causæ*, it will be of great assistance to us in the analysis of the more intricate combinations to which we afterwards proceed. Let me not be understood, however, as wishing in the slightest degree to underrate the value of experiment; but merely to show in what manner its place may in some measure be supplied, when difficulties stand in the way of its employment.

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* The substance of the following paper was read as a communication to the Royal Medical Society, March 23, 1837.

One of the chief difficulties which arises at the outset of our present inquiry, originates from the self-esteem inherent in man, which has led him to arrogate to himself the sole prerogative of reason; and to maintain that the springs of action which prompt the movements of the lower animals are of a character essentially different from those which regulate his own. Hence has sprung the absurdity of the application of the term instinct to the psychical endowments of every being under the sway of the "lords of creation," and the difficulties which have consequently been raised in the analysis of their actions. This doctrine is, however, rapidly giving way before a more extended spirit of philosophy; and few who have fully investigated the subject are now indisposed to allow that many of the lower animals are endowed with the power of carrying on processes of reasoning, as complete as those performed by man, though of a less complicated character. It is not my intention to enter into an elaborate discussion of this question at the present time; but considering it as decided, I shall rather seek to distinguish the purely instinctive actions, from those which are the result of mental processes, and to determine the parts of the organism, on which they are respectively dependent.

In this examination, I shall therefore follow the principles which I have just laid down, by commencing with the simplest class of the instinctive actions performed by living beings. Although many writers have objected to the application of the term *instinct* to the vegetable kingdom, it has been, I apprehend, principally because the ideas of sensation, consciousness, and volition have been more or less mixed with their notion of its import. But, as I shall presently show, though these conditions frequently accompany instinctive actions, and sometimes partake in their production, they cannot be truly regarded as essential to them.

The first action of a living being is the absorption and assimilation of its aliment. No one will deny that this is the result of the adaptation of its organism to surrounding circumstances. But there are in the mode in which this process is performed in plants, some peculiarities which claim our attention. What power of *selection* do the roots possess, and how is it regulated? From the little that is known on this subject, I think that it may be inferred that the rejection of any particular ingredient of the fluid in contact with the roots, results either from the want of adaptation in the form or size of its molecules to the pores of the spongioles, or to an organic change effected by it on their delicate tissue. Again, it has often been asked—why do the roots of plants always direct themselves towards a damp soil? This fact has frequently been adduced in proof of the sensibility enjoyed by vegetable organism; but few now regard it in any other light than as an illustration of the exquisite design manifested in the laws of the vegetable economy. It is an established fact that the root only increases in length by additions to its point, (except in a few instances of no importance to the present inquiry;) and that the addition is made in the direction of least resistance, which will always be that where the soil has been rendered yielding by the percolation of fluid. Another fact relating to the growth of the roots has been less frequently noticed. "When two roots of the same kind are planted, the one in a sheltered, and the other in an exposed situation, the former pushes forth its roots in all directions, more especially where there is the greatest supply of nourishment and the highest temperature; while the latter, which, were it to act in the same manner, would be speedily overturned; multiplies its roots in the direction of the strongest blasts, and these acting like the stays of a ship's mast, preserve the trunk in its vertical position." * The author from whom I have quoted this fact does not attempt to explain it; but I think that it may readily be accounted for in the following manner. Mr Knight has shown that the motion of the trunks of trees by the wind is of material assistance in the downward propulsion of the sap; for having confined a stem in such a manner that it could only vibrate in one plane, he found that its increase in diameter in that direction was considerably greater than in the transverse line. It is evident, that the same cause will influence the growth of the roots given off from the longest diameter of the stem; and that a tree which is violently acted on by blasts of wind which strike it most frequently from one quarter, will of necessity send out the strongest and longest roots in the same direction. The tendency of plants to grow towards the light may be explained upon similar principles. The illuminated side of the stem becomes hardened and contracted by the fixation of carbon and the exhalation of moisture; whilst the darkened side continuing to grow more luxuriantly, incurvation of the axis takes place. In all these cases of instinctive action, therefore, the effect is manifestly produced by the immediate agency of external stimuli upon an organization fitted to respond to it.

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* Fleming's Philosophy of Zoology, Vol. i. p. 18.

It would occupy too much time to attempt at present to demonstrate the close connection which every process of vegetable growth has with the nature and degree of the stimuli which excite it; and I must content myself with adverting to one or two of the most remarkable of the evident motions exhibited by plants. We can have no hesitation in allowing to certain tissues, in particular vegetables, a power of contractility evinced by the effect of a stimulus applied to the part itself, scarcely inferior to that which characterizes the muscular fibre of animals. Thus the leaves of the lettuce force out their milky juice upon the slightest touch; and the contraction of the vesicles on one side of the filament of the barberry, when irritated by the point of a pin, causes its immediate curvature. Many similar instances might be enumerated; but there are other vegetable motions still more remarkable, where a stimulus applied to one organ produces an effect upon a distant part. Of this character are the closing of the trap of the *Dionæa*, and the folding of the leaves and drooping of the petiole of the sensitive plant. The latter phenomenon has been well explained by Dutrochet and Mayo; the contraction of the part irritated forces a portion of the fluid contained in its vesicles along the vessels of the petiole; and thus being propelled into the intumescence at the junction of the latter with the stem, distends the *upper* side of it, and thus produces flexion of the leaf-stalk. A similar effect is produced by irritating the lower part of the intumescence, or by cutting a notch in it; the contraction of its tissues enables the elasticity of the upper portion (which in its perfect state it counterbalances) to produce a similar depression of the petiole. The impression is here propagated from the part irritated to a distant organ, but not by means of an instantaneous influence transmitted by a nervous system. The vital property of contractility called into play by its appropriate stimulus, gives rise to a series of strictly mechanical actions; and by the peculiar adaptation of the structure of the plant to these, mótion of distant parts is excited.

Some interesting facts connected with the action of poisons on plants lead to the same general result. The effects of metallic irritant poisons appear to be propagated solely through the circulating system. Thus arsenic introduced into the ascending current of sap will destroy the vitality of the line of the trunk and branches, along which that portion of the current passes, without immediately injuring the remainder of the tree. In one of Marcet's experiments, a quantity of arsenic introduced into one of the branches of a lilac, was six weeks in producing the death of the entire plant; and it was remarked by Drs Christison and Turner, in their experiments on the effects of poisonous gases, that those which rank as irritants in relation to animals, appear to act locally on vegetables without any of that sympathetic influence on general life, which is one of their most remarkable effects in the other kingdom. The action of narcotic poisons is somewhat less easy of explanation. They seem at once to destroy the excitability of the parts to which they are applied, and their action is more universal than that of the former class; but I do not myself see any necessity for referring the transmission of their effects through the plant to the operation of a nervous system.

I have dwelt at some length on the phenomena exhibited by vegetables, because I apprehend that the proper explanation of them will assist us in our researches into the instinctive actions of animals. All the actions manifested by plants, may I conceive, be regarded as the direct, and, in many instances, the obvious result of the *respondence of their organism to stimuli fitted to excite it;* and whenever any of these stimuli produces an action in a distant organ, its effect appears to be propagated solely by the circulation of fluid.

My next object will be to prove, that the purely instinctive actions of animals may be comprehended in the same general definition; but that they differ from those of plants in this important respect, that they are not merely connected with the system of organic life, but also with that appropriated to the discharge of the exclusively animal functions, namely, the nervous and muscular apparatus. From the nervous system being more or less involved in their performance, they are put in some respects on a new footing; but I hope to show that no strictly mental processes are necessary to their manifestation; and that this system acts only by its respondence to stimuli expressly adapted to itself, and by the immediate transmission of the excitation produced by these stimuli to distant parts of the organism.

Before entering, however, upon the consideration of the animal kingdom, let us pause for a moment at the threshold to inquire what are to be regarded as its essential characteristics. The naturalist seeks to establish his classification upon external signs easy to be recognized and comprehended; hence he has recourse to the possession or absence of an internal digestive cavity, the nature of the food, the effects produced by respiration, &c. as his chief diagnostics; but none of these can be alone relied on, and a distinction founded upon them is at best but a superficial one. The physiologist, on the other hand, endeavours to separate the animal from the vegetable kingdom by its possession of the powers of sensation and volition, manifested by the act of voluntary motion; and this is certainly to be regarded as the essential character of an animal, since a being enjoying it would still belong to that division of the organized world, whatever might be its structure; and, on the other hand, a being formed in all respects like an animal, with the exception of its nervous system, (were it possible for such a being to exist) and the consequent deficiency of the powers which it confers, must unhesitatingly be placed in the vegetable kingdom.* Every one must be aware, however, of the difficulty of carrying any such test into practical application; since among many of the lowest tribes of organized beings we observe motions which can scarcely be referred with certainty either to the accidental influence of external causes, or to a stimulus originating in the individual. It appears to me, however, that there has been too much anxiety to draw a definite boundary line; and that without having recourse to the third or intermediate kingdom, proposed by some continental naturalists, we may consider the transition from one division to the other to be of the same gradual character, as is apparent between all great natural groups, when none of the connecting links have ceased to exist. It has, I think, been too much the custom to attribute the motions of the lowest animals to the same spontaneous powers of whose existence in the highest classes we can have no doubt; without sufficiently attending to the fact, that in the former, there is no trace of the presence of those parts of the nervous system which in the latter correspond (to say the least) with their manifestation. I shall endeavour, therefore, to trace the successive complication of the chain of causes and effects in the actions performed by animals, reasoning rather from below upwards, than from above downwards; since it appears to me that animals of the inferior orders (especially those now included in the division Acrita) bear much more resemblance to vegetables in the *totality* of their vital actions, than to the higher members of their own kingdom.

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* I do not of course allude to *monstrous* productions.

It is necessary that, before proceeding farther, I should specify the sense in which I am about to employ certain terms to which different authors have attached a great variety of meanings. These terms relate to the process by which the thinking mind takes cognizance of the qualities of external objects; a process which, though apparently simple, is resolvable into many steps, each of which has its appropriate designation. In the first place, an *impression* is produced upon the organ of sense by its appropriate stimulus, and this impression is propagated along the nerve which connects it with the *sensorium commune.* We are justified in regarding the formation and propagation of this impression as a strictly corporeal function, although we cannot trace the organic change of the nervous system by which it is accompanied.[*] This impression conveyed to the sensorium gives rise to that mental change which is termed *sensation*, which may be regarded as the passive reception by the mind of the impression made upon the organ of sense, which thus communicates to it the simple notion of the presence of an external object. For this change to take place, let it be observed, consciousness is all that is requisite; and if consciousness exist, and the nervous communication be perfect, sensation must follow an impression. The mental change termed perception may or may not follow according as the attention is directed to the sensation; and this change consists in the formation of a notion of the qualities of the external object, derived by inference from the sensation. The first stage of the process is therefore purely corporeal; the third purely mental; the second is the stage of transition by which the body communicates with the mind.

Now for each of these steps in the action of the body on the mind, I think that a corresponding step may be traced in the reciprocal action of the mind upon the body. Before a perception can occasion any corporeal change, it must have given rise to various mental processes, such as association, judgment, &c. with the nature of which we have at present nothing to do. These, however, all terminate in the formation of a *volition*, which may I think be regarded as a strictly mental act,[†] and as holding a corresponding rank with perception in the scale I am attempting to describe. This mental act gives rise to a physical change in the sensorium, to which I do not find that metaphysicians have given a name; a change which corresponds in an opposite direction with that of sensation, and which for convenience I shall at present denominate the *motive action.*[*] This motive action propagated along its appropriate nerve, stimulates the muscular fibre, and thus produces voluntary motion; and this stage of the process, which for want of a better term I may denominate *stimulation*, [†] is evidently reciprocal to the impression at the commencement of the nervous cord. We may then arrange these processes in the following table, which will shew their mutual relation.

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[*] Prichard on the Vital Principle, p. 147.

[†] Roget's Physiology, Vol. ii. p. 535, note.

Impression		Stimulation.
↓		↑
Sensation		Motive action.
↓		↑
Perception ———— >	Mental acts ———— >	Volition.

I have thus endeavoured to analyze the steps of the process by which voluntary motions result from impressions on the organs of sense. We have now to examine whether there can be no more direct connection between an impression and a motion. The whole class of what are usually regarded as automatic or strictly involuntary motions will at once occur to us. Adopting the doctrines of Haller on the irritability of muscular fibre, we perceive that the contraction of the purely involuntary muscles, such as the heart, and the muscular coat of the alimentary canal, results from a stimulus applied directly to themselves, without the intervention of nervous agency. I scarcely perceive how we can distinguish this contraction from that which occurs in the irritable tissues of plants, and the structure, by which it is performed, gradually loses its peculiar character as we descend in the animal scale, until we can perceive no trace of it whatever. These contractions may then be regarded, like those of vegetables, as forming part of the *organic* functions of the being, since they are entirely independent of nervous influence; and as forming, together with the changes (probably of a strictly physical character, although called into play by vital action,) which constitute the functions of absorption, assimilation, &c. the lowest class of instinctive actions in which we can trace most clearly and immediately the respondence of the organism to external stimuli.

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[*] The term motive action I employ as corresponding with the "influence of volition" of some writers. If volition be a purely mental act, and an organic change take place in the nervous system as its consequence, it is evidently desirable not to confound these processes, as has been done by those writers who speak of *motion* as the direct result of volition. I am no advocate for the multiplication of terms, and shall feel happy to dispense with these, if it can be shown that they are unnecessary.

[†] I employ the term *stimulation* to designate this stage of the process, as implying the action of the nervous power upon the muscular fibre, which corresponds, according to the Hallerian doctrine of irritability, with that of other stimuli applied directly to the latter.

Now it is probable that in the lowest animals which present any traces of a nervous system, it exists in that form which is such an interesting stage in the development of the higher organisms—namely, a number of nervous filaments radiating from the circumference, but unconnected with a common centre. In the sub-kingdom Acrita, no vestige of a nervous system can be detected; and it is generally supposed to be present in a *diffused* form; that is to be distributed in insulated globules through the tissues. Our ideas of the transmission of nervous influence forbid us from believing that, in the first of these cases, and much less in the second, there can be anything like a *sensorium commune;* and I am much mistaken if a rigid analysis of the motions of these animals would not enable us to refer most of them to the immediate action of external stimuli, and thus to the same class of instinctive actions as the motions of plants and the contraction of the purely involuntary actions of animals. Let us take for example the common polype *(Hydra viridis;)* in its bodily structure we may regard it as *all stomach*, and every action it performs, is directed towards filling its digestive cavity, since its generative functions are altogether beyond its control. The irritable tentacula surrounding its mouth contract upon the slightest touch, and inclosing whatever may be in contact with them, endeavour to convey it to that aperture. Now we have here a remarkable analogy on the one hand, with the *Dionæa muscipula*, whose curious motions would seem to have a similar object; and, on the other, with the motions of the muscular part of the alimentary tube in higher animals, a correspondence, indeed, so strong between the *effects*, that it would be unphilosophical to suppose the *cause* to be different. With regard to the other motions exhibited by the same animal, I am inclined to believe that they may be mostly accounted for by the direct stimulus of light, heat, &c. like those of plants. I am far from wishing, however, to deny to the creature some degree of sensation exciting pleasure or pain, and of volition in directing its movements; but I conceive these to be very small, and to be but little effectual in the maintenance of its organic functions, which are supplied by this simplest kind of respondence of the organism to external stimuli, which I may call *organic instinct.*

It is a principle of which every one must be aware, that in proportion as we rise in the animal scale, we find the action of external stimuli giving place to that of internal volition. Thus we all know that most animals are more susceptible than man of atmospheric changes; and that those individuals of the latter species are usually most cognizant of them, whose mental faculties are the weakest, or least appropriately employed. It does not necessarily follow, however, that these changes do not produce sensations in him; but, on the contrary, it is probable that from the attention of the mind being directed to other objects, no perception of them takes place. I think that we shall be able to trace in the different muscles of the human body a gradation similar to that which we observe in the animal scale, with regard to the effects of the two kinds of stimuli.

Having now disposed of the first or lowest class of instinctive actions of living beings, we next pass to those which are connected with the nervous and muscular systems, and are therefore peculiar to animals, involving the organs of the life of relation. I have already stated my belief that in some of these, the nervous system acts merely as a *conductor* of stimulus from one organ to another, without the necessary intervention of any mental change; and this I imagine to be the principal office of those connected fibres which we see in some of the Echinodermata on which no ganglia exist. The nerves, then, taken in this simple view, serve to establish an instantaneous communication between distant organs of the body, and at the same time to collect and harmonise the impressions made on all, so that no part may act independently of another.

There has been much controversy amongst physiologists as to the classification of those muscles which, being called into play in the living body by the stimulus of nervous power alone, are more or less under the control of the will. My friend Dr John Reid has suggested to me that the difficulty may be overcome by regarding every muscle in the body which is supplied by motor nerves, as equally susceptible of stimulation from two different sources, namely, volition, and sensation without volition. Thus any one will involuntarily draw back his foot if the skin be pricked or pinched; and the same motion will be performed by the body of a frog after the brain has been removed. The muscles of the leg are not, however, frequently called into play in this manner, being more commonly acted on by volition. In the diaphragm, on the other hand, the uniform alternation of contraction and relaxation is kept up by the constant stimulus of the "respiratory sense," or "besoin de respirer," originating in the lungs, whilst the will is much seldomer called upon to act, and, as long as the stimulus continues, cannot altogether control the muscle. Hence the difference between the actions of the diaphragm and those of the most purely voluntary muscle in the body, is not one of *kind*, but simply depends upon the respective proportions of the two stimulating powers. I shall presently have to extend the view which Dr Reid has suggested to me, by showing that the contraction of a muscle may result not only from the direct stimulus of a sensation, but even from that of a simple impression. The following tables will show what I think may be regarded as the three modes of communication between an organ of sense, and a muscular fibre excited to contraction by nervous influence.

$$\begin{tikzcd}
\text{1. Impression.} \arrow[r] & \text{Stimulation.}
\end{tikzcd}$$

$$\begin{tikzcd}
\text{2. Impression.} \arrow[d] & \text{Stimulation.} \\
\text{Sensation.} \arrow[r] & \text{Motive action.} \arrow[u]
\end{tikzcd}$$

$$\begin{tikzcd}
\text{3. Impression.} \arrow[d] & \text{Stimulation.} \\
\text{Sensation.} \arrow[d] & \text{Motive action.} \arrow[u] \\
\text{Perception.} \arrow[r] & \text{Volition.} \arrow[u]
\end{tikzcd}$$

The first class of movements evidently corresponds with the excito-motory actions of Dr Marshall Hall, the Sympathetic of Dr Whytt and other writers. The constant association of particular muscular movements with certain impressions on the organs of sense has long been known, and has been a fruitful topic of discussion amongst physiologists. It has been usual to ascribe them to the intervention of sensation between the impression and the contraction; but of this I see no further proof than that they are always accompanied in the normal state of the system with this change in the sensorium (consciousness of course being present,) and that it is therefore difficult to suppose that they can take place independently of it. I think that it might be replied, however, that if the purely involuntary muscles contract by an impression immediately produced upon them, there is no great difficulty in supposing that in another instance contraction may be produced by an impression made on a distant part, the nervous cords acting simply as its conductors. The question is not, however, to be decided by *a priori* argument; it is one of fact, and to facts we shall now recur.

Whytt, Legallois, and many other physiologists have noticed the remarkable motions occurring in the extremities of animals after the brain has been removed, and have shown that the integrity of the circle of sensitive and motor nerves completed through the spinal marrow, is essential to their performance, since, when this circle is broken by the destruction of the spinal marrow, the motion ceases to follow the application of a stimulus. Hence, they concluded, that *sensation* remains in the spinal cord after the destruction of the brain; and Cuvier has sanctioned this view, by regarding them as a test of that process. But this assertion arises solely from the desire of preserving an apparent uniformity in the effects of impressions on the muscular system; and while laying great stress on the constancy of the accompanying sensations while the brain is entire, they have overlooked the fact, that *perception* will follow as well as *sensation*, if the attention be awake and not directed to other objects. The same argument then which is used to invalidate their dependence upon perception, will also hold good against their being the result of sensation; for, except the continuance of these motions, we have no reason to believe that sensation can exist when the brain has been removed; and to say that sensation remains because these motions result from the application of stimuli; and that the motions follow the stimuli because sensation remains, is obviously arguing in a circle. It is impossible, therefore, to determine by experiments of this kind, whether the act of sensation can take place in the spinal cord or not; but inferences of a more certain kind may be drawn from pathological phenomena. Thus Mr Mayo relates a case* of palsy and complete loss of sensibility in one leg, in which nevertheless irritation of the toes produced retraction of the leg, without, as he was assured, any sensation on the part of the patient.

An interesting case, having a similar bearing, has been communicated to me by my friend Mr Madden, in whose words I shall relate it. "In the autumn of 1834, I was in attendance upon a case of complete paraplegia, in which it was necessary to employ the catheter twice daily. On several occasions, when the point of the instrument was passing the prostatic portion of the canal, where a slight obstruction existed, I observed that the patient jerked his legs violently; but upon inquiry he positively denied having experienced any sensation, being not even conscious of the presence of the instrument in the urethra. The disease appeared to have been originally induced by two severe injuries received a twelvemonth before. Upon dissection, the spinal cord in the lower part of the dorsal region was found completely disorganized, being converted into a semifluid pulp. The preparation has been placed in the Museum of the College of Surgeons." It may be objected that in this case the diseased state of the spinal cord forbids us from asserting that the motions were the direct result of the impression made in the urethra; but, it will be recollected, that such motions are not unfrequently perceptible in the healthy state of the nervous system, when any obstruction exists to the passage of an instrument; and that the phenomenon so frequently occurred in this instance as fully to point out the relation of cause and effect. I have no doubt that many cases similar to these will be detected, when the attention of practitioners is sufficiently called to the question.

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* Outlines of Pathology, p. 154.

Again, Dr Ley [*] mentions a person in whom the *par vagum* appeared to be diseased; the lungs suffered in the usual way in consequence; and the patient had evidently laborious breathing, but said distinctly that he felt no uneasiness in the chest. Among the cases detailed by Sir C. Bell, at the end of his work on the Nervous System, there are several which have an interesting bearing on this question. Thus he mentions a case (151) in which there was no power whatever over any of the voluntary muscles, but those of the eyes and face; the tongue of the patient refused utterance, and her legs and arms lay motionless; yet she could swallow easily, and all the respiratory movements were performed. There are many other cases on record of the same kind; and in some of these it is related that muscles usually styled voluntary, but over which the will had no power, owing to the existence of paralysis, were excited by impressions connected with the respiratory organs. Now it is evident that there was in these cases no deficiency in the conducting and stimulating power of the nerves, nor in the mental act of volition; it must have been, therefore, in the process of motive action that the defect lay; and as sensation can only act through this channel, it is obvious that the impression derived from the respiratory organs must have produced direct stimulation, sensation accompanying the change, but not being essential to it. My meaning will perhaps be made more apparent by the following table.

$$\begin{tikzcd}
\text{Impression.} \arrow[rr] \arrow[d] & & \text{Stimulation.} \\
\text{Sensation.} \arrow[d] & & \\
\text{Perception.} \arrow[rr] & & \text{Volition.}
\end{tikzcd}$$

In another instance (173) related by Sir C. Bell, the contrary state existed; the external respiratory muscles of the neck and chest would not obey the usual stimulus so as to dilate the chest for inspiration, although they were perfectly under the control of the will. Now if it is necessary that sensation be produced, and an act of volition excited, where is the seat of deficiency of power? Certainly not in the brain, for volition was strong; nor in the nerves of sensation, for these conveyed to the mind the sensation of distress; nor in the nerves of motion, for in the voluntary movements of the frame these muscles were put in action. The defect was evidently in the production of stimulation as a direct consequence of impression.

Without entering further into this question, I think that we are warranted in coming to this conclusion, which I state in the words of a late most able review on the subject. "As it is only by exciting a peculiar unknown change in the spinal cord that impressions on any sensitive nerves excite sensations in the mind, so it is quite possible that these changes in the spinal cord may not be wholly prevented from taking place in cases where disease of the brain or injury of the cord itself so far affects the spinal cord as to prevent sensations from being felt; *and that these changes, not the sensations which in the natural state accompany them, may be the causes of the sympathetic or involuntary motions.*" *

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[*] Essay on Laryngismus Stridulus, p. 417.

We may now briefly inquire what class of motions result in the usual conditions of the body from the influence of impressions only. It is of course very difficult to specify these; but I think that there is evidence that all the motions *immediately* concerned in the supply of the organic functions are thus performed. And in many of the lower animals possessed of a nervous system, and a complicated digestive apparatus, but endowed with little power of locomotion, such as the greater part of the acephalous Mollusca, these appear to be almost the only kind of actions which the organism is called on to perform. In the higher animals, the most obvious of these motions are connected with the act of respiration, which some authors have most unaccountably referred to an exercise of volition; but there are others as complex, although usually more directly controlled by the will, as for instance those of deglutition, defecation, and urination, which have been performed by acephalous infants;† and those essential to copulation which have been performed by men and animals labouring under complete paraplegia, in some of which cases it is stated that ejaculation took place without sensation. If, as Sir C. Bell believes, a peculiar column in the spinal chord is requisite for associating the roots of the nerves concerned in respiration, why should not each of these complex associated actions have its peculiar tract also? Instinctive movements referable to this *excito-motory* class, may, I think, be excited by atmospheric influences, which need not produce a definite sensation; and to this head I should refer the commencement and conclusion of hybernation in animals, (that of plants being entirely referable to the organic instincts,) and the activity of insects in sultry weather, especially before a thunderstorm. It would, however, be very premature to state this opinion with confidence in the present limited state of our knowledge on these subjects.

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* British and Foreign Medical Review, Vol. iii. p. 38.

† It might be objected to this view of the actions of acephalous infants, (all of which, it may be remarked, are *immediately* directed to the supply of their physical wants,) that if unpossessed of *sensation*, they must be regarded as mere automata. It may, I think, be fairly replied, that whether the movements are produced by sensations or are the direct result of impressions, they are still purely automatic, unless we suppose that the spinal cord may be the seat of *volition* as well as of sensation.

The next class of muscular movements comprehends those which are the direct result of sensations acting immediately on the motor nerves without the intervention of volition; and this will, I believe, comprehend all the remaining purely instinctive motions of animals, which minister less directly to their organic functions. I still call these *instinctive* actions, because they are the direct respondence of the organism to external stimuli; and do not appear to me to be dependent on the will, although more or less under its control, and although consciousness is essential to their production. They still present the same certainty and uniformity as are observed in the previous cases; they are performed without education in the first instance, and are not improved by practice. It would appear that the impressions made upon the organs of special sense can act in no way more direct than this; and the reason is evident. It is by them that animals take cognizance of distant objects not in immediate contact with their bodies, and therefore not holding a direct relation with their organic instincts. Now we observe that in many of the lower animals, certain actions result immediately from *sensation*, which in man are only performed after *perception* has taken place, and a notion thus formed of the character of the external object, which is only acquired by education. Thus the sight of an infant or of a person who has newly acquired this sense is educated by the touch; whilst many animals manifest by their actions that no such mental process is necessary; their sensations being, as it were, converted into motions without farther intervention. Thus a duckling upon being hatched will at once run to the nearest water; and a fly-catcher, just out of its shell, will peck at an insect within its reach, and seldom miss its aim. Where a succession of complicated motions is required for a particular purpose, as for instance the construction of a habitation, I think it probable that there may be a general act of volition controlling the whole, though each individual action is the result of its appropriate stimulus. It is generally allowed that there is in the *mind* of the animal performing the actions constantly observed in its species, nothing like an adaptation of means to end, this adaptation being in the physical confirmation of the nervous system, which, to use a very rough but approximate simile, may be constructed like the barrel of an organ, to play any tune that is set upon it, when the impulse is given by the motion of the handle. *

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* It has been well remarked by Mr Macleay, that "perfection among the Annu-

To the same head may be referred a great variety of instinctive actions in man, though these are more liable to be obscured by the exercise of volition. Thus, for example, the motions necessary to maintain the balance of the body, or to save it from immediate danger, cannot be regarded as voluntary, since they may be performed when the attention of the mind is directed to other objects, and when perception cannot therefore take place. I am disposed to believe that the associated movements which have been acquired by habit may in like manner be performed by nothing more than a general act of volition directing the organs of sense to the appropriate objects; but that each separate movement is the result of a distinct stimulus from without acting on the shorter chain which habitual excitement has thus formed, although an effort of volition was at first necessary for each. As an illustration of my meaning, I may advert to the example so often cited, of a person playing a complicated piece of music whilst the attention is fixed upon a distinct train of thought. There is one case which would even lead to the belief that habitual muscular movements may be excited by *impressions* only; I refer to that of the lady mentioned by Dr Percival, who was much addicted to snuff-taking, and in a fit of profound apoplexy, when no other movements could be excited, irritation of the nostrils with a feather produced contraction of the thumb and finger of the right hand. But it would be absurd to draw a conclusion so important from a single case of this kind. I could wish to have dwelt longer on this part of my subject, but I have already exceeded the usual limits of a communication, and, in summing up that portion which relates to instinctive actions with one or two additional remarks, I may use the language of one of the most philosophical writers on this subject. " In effect, is instinct any thing else than the manifestation without of that same wisdom which directs in the interior of our body all our vital functions."

If we trace the successive steps of the process of digestion, by which the aliment is prepared for the action of the absorbent system, a process which is more specialized throughout the animal kingdom than any other, we shall observe, that in the higher classes, each of the different combinations I have above described has its distinct office in the supply of the organic instinct, and that we may trace along the alimentary canal a series of actions at first purely voluntary, and becoming more and more instinctive as we pass along, corresponding exactly with

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losa seems always tending to make the animal a complicated machine, guided solely by the instinct implanted in it by its Creator; whilst in the Vertebrata, perfection seems to tend to make the animal a free agent, and to render it independent of external circumstances."

those which we meet with in descending the animal scale. Thus there can be no question that, in the human being, the prehension of food, and the conveyance of it to the mouth, are strictly voluntary acts; and these are the result of mental processes of a still higher order, connected with the special sensations, and having a more remote bearing on the function to which they minister. In descending through the animal scale, we shall find that the exercise of volition for this purpose soon gives place to pure instinct. The mastication of the food may be regarded as partly an instinctive process, partly habitual; requiring, in the adult, sensation to excite it and the general control of volition; it may therefore, I think, be regarded as an example of the highest class of instinctive actions, which we may denominate *sensori-motor*. The act of swallowing, on the other hand, is the result of an impression rather than a sensation, and is therefore (as Dr M. Hall has shown) one of the lower class or *excito-motor* actions. If Brachet's experiments be correct, the motion of the parietes of the stomach is caused by an impression conducted and reflected by the *par vagum*. The remainder of the motions of the alimentary canal, if Haller's theory be admitted, belong to the class of organic instincts, being the result of a direct impression. I think that if we revert again to the animal scale, we shall perceive that the sensori-motor actions must be lost when there is no longer a central sensorium; and that the excito-motor actions cannot take place where there is no connected nervous system; so that in the sponges and other connecting links between the animal and vegetable kingdoms, whose food is constantly in their immediate proximity, the supply of the absorbent system is effected wholly by the direct stimulus applied to the tissues themselves.

Now a consideration of these facts (which might be similarly traced with regard to the respiratory and generative systems) will lead us to see why the impression should, in the higher organisms, be followed by sensation; and why, in the highest sensation, should give rise to mental acts terminating in volition. Each train of actions requires for its maintenance the stimulus of food, and this has to be supplied by the train above. Thus a cistern-full of water may be speedily emptied by a cock occasionally opened at the bottom, but may be kept full by a ball-cock floating on the surface, and communicating with a reservoir. Now here the action of the ball-cock at the top is not essential to the flow of water at the bottom, but is consecutive to it; it is, however, essential to the continuance of the latter by the supply which it thus insures. Just such is the case with regard to the food of animals. The acephalous infant would not be able to maintain its own existence, because incapable of performing those higher processes which are essential to the maintenance of those which it can execute; and yet these last are fully adequate, as long as its food is supplied from extrinsic resources, just as they are sufficient for the support of those simpler beings whose food is constantly within their reach.

If we turn our attention to the other extremity of the alimentary tube, we may observe a similar necessity for the sequence of sensations upon impressions. In the lowest animals, as in plants, the discharge of excrementitious matter is an act as completely involuntary as the introduction of aliment into the system. Thus in the sponges, the currents of water issuing from the fæcal orifices are observed to continue without intermission during the life of the animal. In proportion as we ascend in the scale, however, we observe special reservoirs adapted for the temporary retention of the excrements; and a particular set of associated muscular movements required for emptying them. If we believe, as I think that we have a right to do, that part of these movements at least are, like those of respiration, the result of impressions only, we have no difficulty in understanding why sensations are associated with them in the perfect organism. These sensations give rise to volition, by the action of which the otherwise involuntary movements are controlled and regulated; and we have constant opportunities of witnessing the result of deficiency in this controlling power.

A similar illustration of the necessary connection of sensation with impressions in ministering to the support of the organic functions might be drawn from the function of respiration. According to the view already stated, the muscular movements required for its performance are simply the result of an *impression* producing direct stimulation through the nervous circle. But we will suppose that during sleep or slight intoxication, a person falls into a position in which the respiration is obstructed by stoppage of the mouth and nostrils, or pressure on the trachea; the *sensation* then produced will call into play other muscular movements, probably to be regarded as instinctive, for the purpose of getting rid of the obstruction. But if the sleep be too profound, as that resulting from narcotics, or severe intoxication, the individual will perish because no *sensation* is produced on the brain, although the respiratory movements would have been continued if not interrupted by external causes. Many a drunkard has been drowned by the accidental immersion of his face in a street puddle.

If the views above stated be correct, the office of the nervous system in its simplest form is merely to convey an impression from one part of the animal organism to another; and next, to refer all these to the *sensorium commune*, where they may be harmonised and more or less controlled by mental influence. Now, the number and variety of the *organic instincts* going on in the system, and which are common to it with the vegetable kingdom, require to be placed in more direct and immediate relation with one another than could be effected by the circulating system, which is their only mode of communication in plants. This is accomplished by means of the sympathetic system of nerves, which also has for its office to convey to the processes of organic life the influence of mental emotions. All the sympathies manifested in these functions are, I think, to be referred to this class of nerves, whilst those of the organs of animal life are, as I have endeavoured to prove, performed by the spinal chord and its nerves.

Another important inference presents itself with regard to the localization of instincts. If the views above stated be correct, the instinct originates in the organ which is the subject of the impression, whether internal or external; and from this impression or the sensations which follow, certain motions result. These may be accompanied with various mental changes, which are not, however, essential, further than that they may give rise to intellectual operations and voluntary motions as the consequence of them, which have the gratification of the instinctive desire as their remote object.

In proportion as we rise in the scale of animal existence, we perceive an increase in the purely mental powers, manifested in the obscuration (not the total suppression) of the instinctive tendencies, and the consequent variation between the actions of two individuals of the same species placed in similar circumstances. This increase appears to me to bear a constant relation with that of the hemispheric ganglia, or the part of the nervous system corresponding to them; but it seems obvious that we are not to look in these masses for the seat of those bodily instincts which belong, not to the *sensorium commune*, but to the whole organism.

It is easy to perceive the final cause of the fact already noticed, that the actions which in the lower animals and in the infant are instinctive, and therefore involuntary, are in the adult human being the result of reasoning processes called into action by sensation and perception, and terminating in an act of volition. If the organization of the human system had been adapted to perform all the actions necessary for the continued maintenance of its existence with the same certainty and freedom from voluntary effort as we perceive where pure instinct is the governing principle, and if all his sensations had given rise to instinctive perceptions, instead of those perceptions being acquired by the exercise of the mind, it is evident that external circumstances could have created no stimulus to the improvement of his intellectual powers, and that the strength of his instinctive propensities would have diminished the freedom of his moral agency.

In whatever point of view we regard the physical, mental, or moral constitution of man, we cannot but be struck with the degree in which he is left to his own resources. He alone is obliged to protect himself by clothing from the inclement elements;—he alone is furnished with the ingenuity necessary to provide it. It is a part of the instinctive or innate constitution of the bee or ant to lay up stores of food for the period of dearth; in man it is left to his own prudence and foresight, and though to all the actions *immediately* necessary for the maintenance of his own existence and the continuance of his race, a powerful instinct strongly impels him, these propensities could not be gratified if the means were not provided by the exercise of the mental powers which he enjoys in a degree far exceeding those of any other terrestrial being.

In tracing the progressive complication of the psychical manifestations of the human being during early childhood, I think that a remarkable correspondence may be observed with the gradual increase in mental endowments which is to be remarked in ascending the animal scale; and that a careful analysis of these changes would thus establish in regard to them the beautiful law which has been shown to govern the development of the corporeal structure. I must leave it to abler metaphysicians than myself to work out the details of this application, confining myself at present to such a sketch as may illustrate my meaning. The first actions of an infant are evidently of a purely instinctive character; they are directed solely to the supply of its physical wants; and if the previous argument be correct, they may result from impressions, without the necessary intervention of sensations, though, if the nervous system be perfect, the latter must follow. This is evidently an analogous state to that which exists in the lowest animals possessed of a nervous system and entirely governed by instinct. The new sensations which are constantly being excited by surrounding objects, call into play the dormant powers of mind; perceptions are formed, and notions thus acquired of the character and position of external things; and the simple process of association and its concomitant, memory, are actively engaged during the first months of an infant's life. At the same time an attachment to persons and places begins to manifest itself. All these are the characteristics of the great majority of the lower Vertebrata, as far at least as our knowledge of their springs of action enables us to form a judgment. As the infant advances in age, the powers of observation are strengthened; the perceptions become more complete; and those powers of reflection are added which prompt him to reason upon the causes of what he observes, and to perform actions resulting from more complicated mental processes than those which guide the infant; at the same time we observe the development of the moral feelings, but these are manifested only towards beings who are the objects of sense. I think that we may discover among the more sagacious quadrupeds, instances of reasoning as close and prolonged as that which usually takes place in early childhood; and the attachment of the dog to man is evidently influenced by moral feelings of which he is the object. Up to this point, then, we observe nothing peculiar in the character of man; and it is only when his higher intellectual and moral endowments begin to manifest themselves, especially those relating to an invisible being, that we can point to any obvious distinction between the immortal Ψυχη of man, and the transitory Πνευμα of the brutes that perish.

GENERAL SUMMARY.

The following positions may be regarded as advanced in the preceding pages. No attempt has been made to prove several of them; since, the ground having already been so frequently discussed, every one has the means of forming his judgment upon them.

1. Many living tissues possess the property of contractility upon the application of a stimulus.

2. This contractility is especially manifested by the irritable parts of certain vegetables; and results in all these cases from the action of a stimulus either *directly* applied or conveyed through the circulating system.

3. This contractility is also especially manifested by the muscular fibre of animals, and may in them be called into play not only by the stimuli which act upon plants, but by another of a peculiar nature, commonly denominated nervous influence.

4. Whatever actions (whether consisting of visible motions or not) are performed by the tissues of plants, may be regarded as the direct respondence of their organism to external stimuli, and as solely connected with their organic life.

5. All the actions (whether consisting of visible motions or not) essential to the organic life of animals, are in like manner produced by the *immediate* action of external stimuli;* and being entirely involuntary, may be called *organic instincts.* Under this head are included (besides many less apparent changes,) the motions of the heart and alimentary canal.

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* The term *external* is here employed in the usual metaphysical sense, implying something distinct from *mental* action. The stimulus may originate in the corporeal organism itself.

6. The first office of the nervous system is to convey to a distant part the *impressions* made upon it, and to produce (by its *stimulation* of the contractile tissues) motions necessarily connected with them. These actions, being purely instinctive and involuntary, may be called *excito-motor instincts.*

7. All that is required for these manifestations is the completeness of the circle of concentric and excentric nerves. In vertebrated animals, the cerebro-spinal axis and nerves proceeding from it are of course solely concerned in this function.

8. In the lowest animals possessing a simple nervous system, these actions make up the greatest part of the sum of the life of the individual; and in the higher, they are immediately connected with the supply of the organic instincts.

9. Where a more complicated nervous system exists, the impressions give rise to mental changes termed *sensations,* the seat of which is some part of the cerebral mass in the Vertebrata, and probably the ganglia connected with the nerves of sense in the Invertebrata. With various sensations, certain involuntary motions are instinctively associated; but as *sensation,* a mental change in the sensorium, cannot immediately give rise to *stimulation,* an organic change at the extremities of the nerves, a *motive action* must be propagated from the sensorium along the nervous conductors, and this cannot result from an external impression wherever sensation does not exist. The instinctive actions thus resulting are still purely involuntary, although they may be controlled in man by the higher power of the will. Certain habitual actions may come to take place nearly in the same circle, which may be called that of *sensori-motor instincts.*

10. Voluntary actions require *perceptions* in addition to sensations and impressions. Perceptions give rise to mental processes terminating in *volition,* which produces motive action and stimulation. Volition is of course confined to the brain, and probably to the cerebral lobes.

11. No distinct division of the spinal marrow is necessary for the performance of the excito-motor, or sensori-motor instinctive actions. The same nervous matter may act as a conductor either to the influence of the will (motive action) or to that of a simple impression (stimulation.)

12. As all the nerves of sensation terminate ultimately in the cerebro-spinal axis, (the spinal cord and its prolongations as far as the *crura cerebri* and *corpora quadrigemina*) and all the nerves of motion arise from it, it follows that all motions must be the result of some stimulus applied to this system; and this stimulus may either be given by an impression from without, or by a mental change within (or in the brain above.) If we regard the cineritious matter of the brain as a seat of conscious-

ness, sensation, the intellectual powers, and volition, the medullary portion of the hemispheric ganglia being merely a conductor, (a position which I do not wish to be understood as advocating,) it necessarily follows, from the positions previously taken, that the sensory and motor tracts in the brain simply convey *upwards* to the cineritious matter, the influence of the impressions existing in the cerebro-spinal axis, and *downwards* the motive action resulting either immediately from sensation, or from volition.

ART. V.—*Cases illustrating various points in Physiology, Pathology, and Therapeutics.*

CASE 1. *On the efficacy of the Cold Affusion in the treatment of poisoning with Hydrocyanic Acid.* By JOHN TATAM BANKS, M. D. Senior Physician to the Louth Dispensary, Lincolnshire.

HARRIET Gale, a delicate and interesting looking young woman, aged 19, had been for some months labouring under indigestion, and had experienced so much flatulence, oppression, and pain at the pit of the stomach, and nausea, especially after eating, that she was induced to take as little support as possible; and had thus become extremely weak and attenuated when she placed herself under the care of Mr Ditchett, a respectable and very intelligent surgeon of this place. This gentleman considered the case to be one of atonic dyspèpsia, and, after exhibiting, with little or no amendment, a variety of remedies usually given in such affections, had recourse to the hydrocyanic *acid*, which he prescribed in two drop doses in a six ounce mixture.

From this medicine the girl derived great benefit,—and having been recommended to persevere in its use, but dreading the expence,—she requested to have it sent in as cheap a form as possible. With this Mr Ditchett at once acquiesced, and said he would give her some drops:—and accordingly an ounce and a half vial was sent, containing forty drops of the acid, (prepared by *Garden*, Oxford Street,) of which she was directed to take a teaspoonful in cold camomile tea, three times a day. Every precaution accompanied these directions; but unluckily the young woman thought the vial too large for the drops alluded to, and, neglecting to read the directions, she carelessly poured out into a cup rather more than three fourths of the whole mixture, and instantly drank it off. Immediately after taking it, she exclaimed "bread, bread,"—and in another instant her mother perceived her spring up convulsively from her seat, and quickly ran to her assistance. The mother states that she was then quite sense-less, her teeth firmly set, and her eyes staring and fixed. She was dreadfully alarmed, and immediately sent for Mr Ditchett, who, accompanied by his partner, Mr Johnson, arrived at the patient's house within five minutes from the occurrence.

These gentlemen found her in the condition Mrs Gale describes, and they lost as little time as possible in endeavouring to administer the most powerful and diffusible stimulants, but without avail, as she was unable to swallow: and they resolved upon using the stomach pump. Having done me the honour to request my attendance, I joined them about a quarter of an hour after the accident. The convulsive stage was now passed; the young woman was lying on the floor, the limbs quite flaccid; eyes fixed and glistening; the pupils dilated and wholly insensible; respiration slow and feeble; and the pulse scarcely perceptible, with a cold clammy sweat over the surface. Sinapisms were now placed on the feet, and over the cardiac region, friction and warmth applied to the whole surface, and the *Aqua Ammoniæ* largely diluted introduced into the stomach by the stomach pump, and again ejected: after which a smaller quantity with half a teacupful of brandy was injected, and allowed to remain.

Notwithstanding the employment of these measures, the insensibility, prostration, and paralysis continued as intensely as before; nor could we perceive amelioration in any of the symptoms.

The experiments of Dr Herbst of Göttingen having at this moment occurred to me, I suggested to my medical friends the cold affusion to the head and spine, which was directly complied with; and a stream of cold water from a large pitcher at some distance above the head was allowed to fall upon it. A minute had not elapsed before the patient began to move, and in a very short period longer she became convulsed, and writhed and moaned as if in agony. We were all amazed at the effect produced, and, not having witnessed any thing of the sort before, I confess not altogether without apprehension, that we might be doing more harm than good. But finding the respiration becoming quicker and stronger, and the pulse fuller, we resolved upon repeating the application, when she again cried out as if in great pain, extended the extremities, and passed an involuntary evacuation. The pulse and breathing were now considerably improved, and there was some appearance of returning consciousness. A bed was brought down stairs, and when well-heated, she was placed in it, and reaction soon seemed fully established. In the course of a few hours, she appeared quite sensible, and collected, but had no recollection, nor was she up to the present time, of any thing that had transpired. She was ill and weak for a few days, and complained of weight, and pain, and heat of the head, with some gastric uneasiness, but which were soon relieved.

She is now in the enjoyment of pretty good health.

In relating the above case, I do not by any means intend to affirm that the girl would have died, had not the cold affusion been resorted to.

I do not know whether the dose of the acid was sufficient in her case (had no remedial means been adopted) to prove fatal: at any rate it had proved so sedative as fearfully to prostrate the whole nervous system, and the lungs and heart in consequence; and my object in publishing the case is to pourtray the extraordinary efficacy of the cold affusion, poured from a little height upon the head, in powerfully arousing the nervous system when its energy seems almost destroyed.

Louth, May 5, 1837.

CASE 2.—*Case of Neuralgic Disease.* By JOHN M'DERMENT, M. D. Irvine.

On the 26th November 1834, I was called to attend Miss H. R. aged 22, who had suffered severely for four years, the last eight months of which she had been confined to bed, in consequence of constant pain, and a train of ever-changing morbid sensations in the head, face, chest, abdomen, back, and, in short, almost every part of her body. Her pulse was 78, of good strength, and regular; the tongue clean; the bowels rather torpid; the appetite deficient; emaciation, however, not remarkable; she slept badly; the urine was pale and copious, with occasional dysury; and the catamenia were regular in periodicity, but rather frequent and plentiful, and during menstruation there was uniformly an aggravation of her symptoms. She experienced a sense of constriction and pain in voiding the fæces. Her mental faculties were unimpaired, except in the acme of her agonizing paroxysms, which happened for the most part at the menstrual period, when she became greatly excited and delirious. This was almost invariably succeeded by a cataleptic state, which lasted for about twelve hours.

The patient gave a lucid and even graphic description of her sensations, which were of the most harassing, anomalous, and protean character. At times, she felt as heavy as lead; again, as light as a feather; now as if her body were preternaturally soft and flexible, at another time as stiff as a board. This feeling was in so far accounted for, as, on these occasions, the muscles of her legs, arms, &c. were almost of tetanic rigidity. One of the most frequent and distressing sensations was that of screwing and tightening, (as she expressed it,) of the muscles of her face, neck, and chest. But indeed there appeared to be no limits to her multiform morbid feelings, which no language, she said, could adequately depict. Her complaints were said to have commenced immediately after small-pox, (which she had in 1830,) with severe pain between the shoulders, which gradually spread along her back and body, and assumed the peculiar characteristic features of the case.

On examining the spinal column, considerable tenderness was experienced, particularly over the seventh cervical, and twelfth dorsal vertebræ. No stricture (which she imagined was the case) could be detected in the rectum, on examination *per anum.* In consequence of anorexia and reluctance at animal food, her diet consisted of soups, rice, arrow-root, and other farinaceous articles, but of which she partook very sparingly. Wine and fermented liquors disagreed with her; but she took with relish, and with relief to her dysury, a modicum of gin-punch at bed-time.

The case had been long treated as spinal irritation, by means of blisters, issues, local bleeding, counter-irritation, prussic acid, &c., but without palpable benefit. Her medical attendant having died a few months before, Dr P. a retired army surgeon, took charge of the case in the interval. His opinion was, that, although the spinal nerves were involved in the disease, the case was that of general morbid sensibility of the cerebro-spinal and ganglionic systems, and, in consequence, he had given, from its reputation in allaying morbid sensibility, the nitrate of silver for the last two months, in doses of 1 grain, increased to 1½ grains, three times a day. The bowels were regulated by a pill composed of the extracts of colocynth, and hyoscyamus, and blue pill; alternated with the assafœtida pill, and an occasional enema.

At the time I was called, it was considered expedient to suspend the exhibition of the nitrate of silver, in consequence of a burning sensation experienced at the epigastrium, and it was agreed to substitute the *Carbonas Ferri,* and the more particularly, because the pain of the right side of the face and upper gum had lately assumed the character of *tic-douloureux.* Failing the good effects of the iron, the sulphate of quinine was to be tried, and, in the event of its want of success also, the nitrate to be resumed, and pushed as far as could be done with safety. The prepared carbonate of iron was accordingly exhibited in doses of half a drachm, increased to two drachms three times a day, for a month, and the quinine in two grain doses, at first twice, and afterwards thrice daily, for the same period, but without any perceptible benefit. At this time (January 1835) Dr P. discontinued his attendance.

In February 1835, the *Nitras Argenti* was resumed. It was commenced in doses of 1½ grain three times daily, gradually increased to 2 grains, and persevered in for ten weeks, when it had to be discontinued, as the burning sensation which it formerly produced was felt in an extreme degree, while her torment-ing sufferings were not in the least mitigated. (May.) On examining the spine attentively, very slight pressure, particularly on the before-mentioned vertebræ, produced intense vibrations of pain through the face, neck, chest, abdomen, &c., besides sickness and tendency to syncope. The tonic plan of treatment having failed so egregiously, the spinal irritation being so exquisite, the pulse still good, and the nutrition of the body wonderfully maintained, notwithstanding her incessant distress and inappetency, I gave another trial to counter-irritation. A copious pustular eruption was accordingly brought out over the tender parts of the spine, by means of friction with equal parts of croton oil, and strong *Aqua Ammoniae.* This was persevered in for upwards of a fortnight, but the pain and uneasiness were so intolerable, that no entreaties could prevail upon her to continue it longer. (June.) I alternated the counter-irritation with the following sedative treatment. The extract of hyoscyamus, muriate of morphia, &c., were given in succession, and in combination, in full doses, and a belladonna plaster was applied from the occiput to the sacrum. Under this method, there was considerable relief, but it was evident the effects were only temporary and palliative. (July.) Dr Donaldson of Ayr was requested to visit her. After consultation, it was resolved, the case having proved so indomitable, to try a repetition of the hydrocyanic acid; and, as she had lately suffered severely from headach, the head was shaved, cold lotions applied, and a blister placed on the nape of the neck. A trial was given to a more generous diet; but, from her disrelish of all kinds of animal food, it had soon to be relinquished. The prussic acid in almond emulsion was pushed as far as could be done with prudence for a month; but it seemed to produce much less sedative influence than the narcotic treatment, while it caused distressing nausea and oppression at the stomach.

(September.) I now resolved, so many powerful therapeutic agents having been employed unsuccessfully, to try the effects of strychnine, from its established energetic action upon the nervous system, and commenced with one-twelfth of a grain twice, gradually augmented to five times daily. Its exhibition immediately produced a feeling of warmth in the stomach, which she said was rather grateful, and quite different from the burning sensation produced by the *Nitras Argenti*; and after a few doses, a sense of pricking and tingling was experienced in the course of her radiations of morbid sensation, and, to use her own phraseology, " the new sensations were struggling powerfully to overcome the old." This was so far encouraging, as, although her original sufferings were little if at all diminished, the medicine appeared unequivocally to exert a powerful impression upon the nervous sensibility. After having persisted in its use, however, for nearly two months, and although I was not without hopes of its ultimately proving beneficial, I was obliged to desist in consequence of its inducing frequent and violent *subsultus tendinum*.

(January 1836.) For several weeks she remained in much the same state; but she enjoyed comparative immunity from what she termed her "high fits," and the consequent catalepsy. Her pulse ranged from 72 to 78; the tongue was clean, but the appetite very defective. An enema was given every second or third day, and a teaspoonful of a mixture containing equal parts of solution of muriate of morphia and tincture of hyoscyamus (which, of all the anodyne preparations, produced the most powerful effect,) at bed-time and occasionally, when her sufferings were very excruciating. The belladonna plaster, from which she felt relief, was kept constantly applied. After so many repeated fruitless attempts of powerful therapeutic agents, I confess I was sceptical of the curative effects of any medicine; yet, from the eulogia lately given to veratria, I commenced, (March,) as a kind of last resource, a trial of it. One-twelfth part of an ointment, composed of ten grains to an ounce of axunge, was rubbed along the affected parts of the spine twice a-day. The first three frictions had little palpable effect, but after the fourth, a feeling like electricity emanated from the spine, and radiated all over the body, which increased in intensity, on every succeeding friction, till it amounted to a sensation as if (as she expressed herself) "she were filled with quicksilver." This was succeeded, in the course of its employment, by numbness of the legs and arms.

Notwithstanding the energetic effects of the medicine, the original symptoms remained unsubdued. (May.) After a short interval, another trial was made of it, and on this occasion twenty grains were added to one ounce of lard. On the very first application a thrill darted over the body to the extremities, as if large drops of water were trickling to her feet and hands, and this was followed by the feeling of numbness experienced before. This last sensation increased so much on every subsequent friction, and became so distressing, and even alarming, that I was obliged, after having persisted for ten days, to suspend it. (June) It was again resumed for a short time. Similar results followed, but without any improvement in her symptoms.

In the beginning of July, I was requested to visit her without delay, as her symptoms had suddenly become greatly aggravated. Upon arrival, I found her in a state of great suffering, accompanied with extreme debility and fever; pulse 120, and very weak, tongue dry and parched, complete anorexia, and occasional delirium. The prostration became gradually greater, and on the 16th she died, quite exhausted.

Notwithstanding the most importunate entreaties, I could not prevail upon the relations to admit of a necroscopic examination,—a circumstance which I regret extremely, as the case displayed some features different from the generality of these affections of the sensitive and motive systems, and as careful and minute dissections of these very obscure and imperfectly understood cases are still a desideratum in a pathological point of view.

Mr Torbet, in a very interesting and well written paper in the October Number of this Journal, 1825, gives the name of *Neuralgia* to those anomalous affections dependent upon irritation of the great nervous centres, such as that of which I have given an imperfect outline. As this specific distinction is preferable to the vague titles frequently employed, I have adopted his nomenclature. At the same time, the pain in Miss R.'s case was in general dissimilar from that experienced in, what is conventionally called, *Neuralgia* or tic douloureux, with the exception of that in her right cheek and gum, which was unequivocally that of tic, viz. of an electric, lancinating, pricking character, was frequently accompanied by subsultus, and observed a periodical course in its attacks.

This case forms an addition to the numerous examples of the obscurity and complexity of neuralgic affections, and of their intractability to curative measures. We think there can be little doubt that the chief seat of the disease was in the spinal canal, and particularly in the neighbourhood of the seventh cervical and twelfth dorsal vertebræ. That the uterine organs were also implicated, is highly probable from the uniform aggravation of her painful sensations at the menstrual period, and from several of her symptoms being of a hysteric character. The strychnine and veratrine were the only medicines which appeared to have any palpable influence upon the morbid sensibility. The latter in particular produced such an energetic effect,* that the patient, as well as I, was buoyed up with hopes of amelioration, if not of recovery. The fatal termination was no doubt owing to the exhaustion produced by her incessant poignant suffering, and the complete atony of the digestive apparatus, which existed during the latter part of her disease.

Irvine, 3d August 1836.

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* It may be mentioned, as a proof of the energy of this medicine, that the patient's mother, who rubbed it on the parts, had her right hand and fore-arm slightly benumbed, till she used a glove.

CASE 3.—*Case of obstructed Ureter, with ulceration of the Kidney and Abscess.* By ROBERT ALLAN, Esq. Assistant-Surgeon to the Forces. Communicated by SIR JAMES M'GRIGOR, Bart. Director-General of the Army Medical Department.

THE following case is communicated as a good example of a rare occurrence, viz. the occlusion by coagulable lymph of a passage lined by mucous membrane, the cause and consequences of which were well marked. The preparation of the diseased parts was unfortunately lost in the ship Doncaster, which foundered on her passage from the Mauritius. A drawing of them, however, has been received, made by the author, which is placed in the collection of pathological drawings belonging to the museum of the Army Medical Department at Fort Pitt.

Private John Gourlay, aged 30, belonging to a detachment of the 29th Regiment, stationed at Black River, a native of Stirling, (N. B.) of robust constitution, nine years in the tropics, and addicted to the free use of ardent spirits, went to bed in his usual good health, on the evening of the 4th October 1836, and awoke about three in the morning, complaining of violent pain, increased on pressure, in the site of the descending colon; pulse 104; skin moist; thirst. He voided small quantities of urine highly tinged with blood every few minutes.

Two pounds of blood were drawn from the arm; fomentations were applied to the belly; and an ounce of castor-oil was administered.

The blood was buffed and cupped, and about noon the pulse fell to 98. Having vomited the castor oil, a stimulating enema was thrown up. The pain ceased, and he slept two hours. It, however, returned at intervals during the day, while the abdomen became tumid and tender on pressure

He slept several hours on the following night, but on the morning of the 6th, suffered more severe abdominal pain, with the pulse 100, very full; skin hot and dry; less blood in the urine.

The blood-letting was repeated to the same extent. An ounce of sulphate of magnesia was ordered; and a cathartic enema was directed to be administered.

The bleeding produced syncope, and the cathartic operated twice. In the evening the pain shifted towards the left loin, and the pulse was 106, feeble. An anodyne draught was given. He passed a sleepless night, and on the 7th the pain was very severe about the sigmoid flexure of the colon. He obtained relief by bending the body forwards. *Ardor urinæ*, urine very bloody; pulse 104, weak; bowels slow.

He was now placed in the warm bath; and the sulphate of magnesia was repeated with some carbonate of magnesia.

In coming out of the bath he voided *per urethram* a triangular piece of gravel of the size of a split-pea, after which he felt much easier, and slept a few hours; the pulse rose to 120, and the cathartic operated. He now complained of pain in the left testicle. In the afternoon the urine was voided perfectly clear and without pain; pulse fell to 100. During the two following days the pulse remained about 100; he had a few slight attacks of abdominal pain; urine natural. Warm baths and frequent doses of nitrous ether were administered.

On the evening of the 9th the pain returned suddenly, and with great violence, in the course of the left ureter, extending to the testicle and orifice of the urethra, while no change of position in the slightest degree relieved. There was cold clammy perspiration, with tumid abdomen, urine clear and in moderate quantity. The pain and fever diminished in a few hours.

From the above date a slight swelling was observable in the left iliac region, which daily increased, and the discharge of urine diminished. The bowels required to be frequently stimulated.

He continued to pass sleepless nights, and there was great anxiety, while the pain in the tumour sometimes increased considerably. The stomach became irritable, and his strength declined rapidly. Emollient poultices were applied to the tumour, and opiates nightly administered.

On the 30th the tumour was very prominent at the left *linea semilunaris*, and there was a pricking pain; pulse 96, soft; urine of natural colour, but voided in small quantities.

Taking into consideration the extent of the swelling, which threatened to burst into the abdomen, the many sleepless nights and consequent exhaustion, it was evident that an attempt should be made to give exit to the contents of the tumour without delay. Dr Stewart, Assistant Inspector of Hospitals, having arrived from head quarters on the 31st October, the following operation was performed.

The skin, cellular membrane, and abdominal muscles, were divided to the extent of an inch and a half in the direction of the fibres of the internal oblique, and about two inches distant from the crest of the ileum, in the line of the umbilicus and on the outer side of the apex of the tumour, with the view of keeping clear of the peritoneal cavity. Perceiving the *fascia transversalis* tense, a large trocar and canula were thrust through it; the trocar being withdrawn the canula was pushed in. Seven pints of fluid flowed out, all of which, with the exception of the last few ounces, which were gelatinous, and evidently the exudation from an inflamed surface, was perfectly clear. An elastic gum tube was introduced, and the canula withdrawn; adhesive straps, compress, and bandage applied.

In a few hours after the operation, he complained of uneasiness in the wound, caused by the point of the tube; the pulse rose to 120; and he voided some clear urine by the urethra. The severe pain and tension were completely relieved, and he slept the greater part of the following night. On the third day after the operation, the elastic gum tube was withdrawn, as nothing had passed by it. He voided urine in small quantities, and with burning pain frequently. The pulse was 120, and the abdomen was rather tense.

On the 3d November he vomited repeatedly, and the abdomen was much swollen; pulse 122, very feeble. The camphor mixture was ordered. On the 4th there was constant vomiting and hiccup, while the swelling in the left iliac region was as great as before the operation. The trocar and canula were again introduced through the wound, and six pints of clear urine came away, followed by the slow discharge of two pints of well-formed pus. An elastic gum tube was retained in the wound.

The report on the evening of the 4th states, that a considerable quantity of clear fluid and purulent matter came along the tube at frequent intervals during the day; vomiting ceased, and he slept a little; pulse 126.

Emaciation and debility increased rapidly; and he had no appetite. The discharge of urine from the wound averaged two pints and a half with one of purulent matter, in the twenty-four hours, while the urine by the urethra amounted to a pint. The bowels required to be kept open by laxatives.

On the 13th November, a large elastic gum catheter was passed by the wound, 11½ inches, and retained there a few minutes.

The appetite improved; and, in consideration of the emaciation and great discharge of pus, his diet was increased. He now had fowl soup, two eggs, and a pint of porter daily, and took sulphate of quinine with sulphuric acid.

At this time he was in an extreme state of debility, and he had an ulcer on the sacrum from pressure; the pulse was upwards of 120, but he slept tolerably well.

About the middle of December, the quantity of purulent matter began to diminish, the appetite continued to improve, and his mind became easy.

Anxious to ascertain if the ureter was pervious, for it was supposed that the tube formerly used had passed in that direction, an elastic gum catheter was again introduced by the wound, 11 inches, and a pint of milk and water injected with considerable force, none of which entered the bladder, but flowed back by the side of the instrument. A gradual and very visible improvement was going on in his general health, and about the end of December he was able to sit up for an hour daily.

There were several symptoms of stone in the bladder, such as *ardor urinæ*, and great pain at *meatus urinarius*, especially while voiding the last drops of urine, along with a mucous deposit. He was sounded. The instrument gave great pain in passing the prostatic portion of the urethra, but no stone could be felt.

In January he rose for two hours daily, and was able to walk about the room. The appetite continued good; and the pus from the wound did not exceed four ounces in the twenty-four hours; sometimes very little urine came by the wound, while the quantity *per urethram* was increased. For instance, it is reported on the 9th January, that only three ounces of urine with four of pus flowed by the wound, and six pints of pale urine by the urethra, during the last twenty-four hours; pulse 114; thirst; bowels regular. The elastic gum tube is still retained in the wound."

On February the 11th, it is noted that "he sleeps well; pulse 128, feeble; thirst; skin hot and dry; appetite very bad; has not been gaining strength for some time past; feet swollen; from two to three ounces of matter discharged by the wound daily."

Towards the end of February he suffered from a severe attack of dysentery; but under the use of blue pill with opium, and small doses of castor oil, the severe symptoms declined in a few days.

Emaciation and debility again increased; appetite fell off; he had griping, tenesmus, and vomiting; the urinary affection underwent no change, but he was so debilitated that he could not sit up even in bed. On the 8th and 9th April, he voided a quantity of muco-purulent matter by stool, and the two following days, the stools were yellow and thin. He sank rapidly, and died on the morning of the 11th.

Post mortem examination.

Great emaciation.

No disease in the head.

Chest.—Both lungs attached to *pleuræ costales* by old adhesions.

Abdomen.—Peritoneum natural, except on the left kidney and lumbar muscles, where it was of a dark blue-colour. This kidney, which was enlarged to twice its natural size, adhered strongly to the surrounding parts: its tubular part was, in a great degree, destroyed or converted into little cells, having a common communication with the pelvis of this organ, and opening, besides, by ulceration in the cortical substance, at two points, into a sac capable of containing a pint, occupying the cellular membrane in the lumbar region. The mucous lining of the kidney was thickened by inflammation, and the commencement of the ureter similarly changed in structure, and completely closed at this point by coagulable lymph, while in the remainder of its course it was contracted but pervious.

The right kidney was of ordinary size, but paler than usual, its ureter natural.

The bladder was small, its mucous coat inflamed, and two superficial ulcerations near the fundus.

The mucous membrane of the descending colon and rectum was slightly inflamed, softened, and covered with purulent matter.

Port Louis, Mauritius, 14th June 1836.

CASE 4.—*Case of Dislocation of the Humerus outwards and backwards on the Dorsum of the Scapula.* By CHARLES WILSON, M. D., &c. Physician to the Kelso Dispensary.

28th November 1836.—ROBERT Bell, aged 50, a farm-servant, residing in the neighbourhood, of a spare but muscular frame, applied to me for advice respecting an injury of the left shoulder, which he had received two days previously. He stated, that when he was lifting an iron plough, for the purpose of putting it into a cart, he fell under the weight, which is very considerable, and having been rolled over during the act of falling, he received at that time the injury complained of, which was at once attended by severe pain and inability to move the arm. His own impression was that the bone was fractured; but having been persuaded by a person pretending to some skill in such matters, that the case was only a severe bruise, he made no application for surgical assistance till to-day, (28th Nov.) when, being still unable to use the arm, and having suffered so much from pain as to have had no sleep during the two nights which had elapsed, he came to Kelso for advice regarding it.

On examining the shoulder there appeared to be a considerable degree of swelling surrounding the whole articulation, with a more particularly marked prominence towards the outer portion of the dorsum of the scapula, at which part the tumefaction was very great, and gave the shoulder a singularly distorted look. The arm was fixed in a direction downwards, outwards, and slightly forwards, so that the line of the humerus proceeded in a direction nearly parallel with that of the lower margin of the scapular portion of the deltoid muscle. The whole shoulder appeared to be depressed lower than that of the opposite side, and the fore-arm was kept flexed. On making pressure immediately below the acromion process, and especially at its anterior part, a vacancy was felt in the situation which ought to have been occupied by the head of the bone in the glenoid cavity; and, on rotating the humerus, the axis of rotation was distinctly perceived to proceed in a line farther back than the proper centre of the articulation, and in the direction rather of the tumour on the back of the scapula; at which part, in fact, on making pressure with the left hand, and continuing the rotation, the head of the bone was readily, and with the greatest distinctness, felt to revolve. The acromion process itself had suffered no injury, and there was no farther appearance of displacement about the joint, with the exception that the neck of the scapula and the glenoid cavity appeared to have been pushed somewhat forwards towards the inner part of the anterior boundary of the axilla, so as to be felt, on pressure with the fingers under the acromial end of the clavicle, more readily than is usual in ordinary luxations of the humerus, where the head of the bone passes downwards into the hollow of the axilla. There was some ecchymosis on the integuments covering the scapula, and a slight abrasion of the skin immediately below the elbow.

It was thus evident that the case was one of dislocation of the shoulder-joint; and, while a first glance showed that the external deformity caused by the displacement of the bone was different from that observed in common luxations, the more minute examination of which I have noted the result proved that the head of the humerus had escaped at the outer and lower part of the glenoid cavity, and was lodged on the *dorsum scapulæ*, at the exterior part of the infra-spinous fossa, and close to the root of the acromion process. As I was aware that this was a kind of dislocation which had been very rarely observed by surgeons of the greatest eminence and most extensive practice, and that the possibility of its occurrence, even had been denied by some of the highest authorities in our art, I was desirous, before proceeding to its reduction, to submit the case to the inspection of my friend Mr Robertson, R. N., a skilful and experienced surgeon, whose attendance I now procured, and who fully concurred with me with regard to the nature of the accident.

In order to effect the reduction we caused the patient to be laid on his back on the floor; and, seating myself also on the floor beside him, I placed my naked heel in the axilla, as is frequently practised in the common luxation downwards, and made the necessary extension by means of a moistened towel tied round his arm above the elbow; when, with a single effort, the head of the bone leapt into its place. Recourse was had to this plan of reduction, because it appeared to me peculiarly adapted to the species of luxation in question, where the head of the bone, resting on the outer side of the glenoid cavity and in part above it, gives to the axilla a degree of extension transversely greater than occurs in ordinary luxations, and such as admits of a ready application of the heel to the inferior costa and neck of the scapula; so that, the glenoid cavity being raised by the heel pressing in one direction, and the head of the bone being lowered, and at the same time directed forwards, by the extension given to the arm in another, the parts are brought into the necessary contact through the instrumentality of a degree of force more moderate, and more economically distributed, than could have been applied in any other way. The result was in the highest degree satisfactory. The patient felt immediate relief, and increased capability of moving the arm, while the tumour had disappeared from the *dorsum scapulæ*, and the shoulder generally was restored to its normal shape, with the exception of the slight diffuse swelling, the result of the increased action produced by the injury, which still surrounded the articulation. The arm was then secured to the side, and supported by a sling in the usual manner.

The displacement in a case of this description could only be produced when the arm was uplifted across the chest, and by a force pressing it in a direction downwards, outwards, and backwards. As soon as the dislocation was effected, the arm would be drawn forcibly towards the side, by the prompt action of the *pectoralis major*, *latissimus dorsi* and *teres major* muscles, and would assume at that time the position which it afterwards retained, the external deformity arising from which I have already described as characterizing the injury. The direction of the arm, it has been stated, was in a line downwards, outwards, and slightly forwards; and the head of the bone appeared to be situated at the root of the acromion process,—behind the glenoid cavity, therefore, and above that part of it where the laceration of the capsule had taken place, and at which alone its reduction into the socket could be effected. In this position the displaced part would be covered by the scapular portion of the deltoid, and by the outer portions of the *infra-spinatus*, and *teres minor* muscles; and the parts in the state of the greatest tension would be the *pectoralis major* and *subscapularis* muscles, the distance between their points of origin and insertion being increased by the distortion resulting from the accident. The arm would be directed outwards by the action of the deltoid, and slightly forwards by that of the *pectoralis major* and *coraco-brachialis*, the latter of which muscles would also suffer a degree of tension from the injury. It would be prevented from proceeding farther forwards, and inwards across the chest, by the contact of the neck of the humerus with the inferior costa of the scapula and the neck of that bone; and, lastly, the head of the humerus would be retained in its position at the root of the acromion, by the tension of the integuments over it, and by the conjoined action of the *supra-spinatus* and others of the muscles proceeding from the scapula to the arm and fore-arm. It is probable that it is in this way that the bone will be ordinarily directed and fixed in luxations backwards, though it might easily happen that the arm should be placed more closely to the side, and in a line more nearly parallel with the axis of the trunk, in a case where the traction caused at first by the *latissimus dorsi* and *teres major* should chance to proceed a little farther than it did in this instance; a circumstance which, it appears to me, would be likely to occur in the case of this accident happening to an individual, in whom, from the shortness of his clavicles, and the consequent forward and somewhat lateral position of the *scapulæ*, (constituting the disposition of the chest and shoulders termed sometimes the "poitrine ailée") the former of these muscles might be supposed to act with increased advantage in antagonizing its opponent on the anterior part of the chest, the action of which would otherwise usually predominate, from the greater degree of tension to which it is subjected by the nature of the displacement.

It is alleged by Sir Charles Bell in his System of Operative Surgery, (Vol. ii. p. 277,) that "no force can be applied *in a direction to dislocate the humerus, and push its head behind the scapula*, for this very evident reason, that the chest prevents the necessary position of the humerus." Mr Liston, (Elements of Surgery, part iii. p. 322,) states, that "luxation of the shoulder-joint is prevented from taking place in *any direction excepting towards the axilla*,—downwards into the hollow of the arm-pit, downwards and forwards under the lower border of the pectoral muscle." It is scarcely surprising that we should find these statements in the works of contemporary authors, when we reflect that Desault, throughout all his vast experience, never met with a single instance of the dislocation backwards; and Bichat was not aware that any such had been recorded. Mr Abernethy never saw an example, and he considered that "it was not likely to happen on account of the strong tendons attached to the tubercles of the shoulder." Boyer, as quoted by Blandin, (Anat. Topograph. p. 472,) could only suppose the possibility of its occurrence in cases where there chanced to be an anormal inclination of the glenoid cavity backwards, facilitating the displacement; of which formation he met with one example in the dead subject, where this dislocation could easily be produced, though it does not appear that the accident had ever actually taken place to the individual while in life. Benjamin Bell, S. Cooper, Mr Allan, Mr Syme, Marjolin, Dupuytren, and other modern writers, though they describe the accident, and admit its possibility, do not seem to be able to appeal to their own individual experience for a single instance of

Edin: Med. & Surg. Jour.

Plate I. p.59. Vol. XIV

URINARY URETHRAL CONCRETIONS IN Dr KEIR'S CASES.

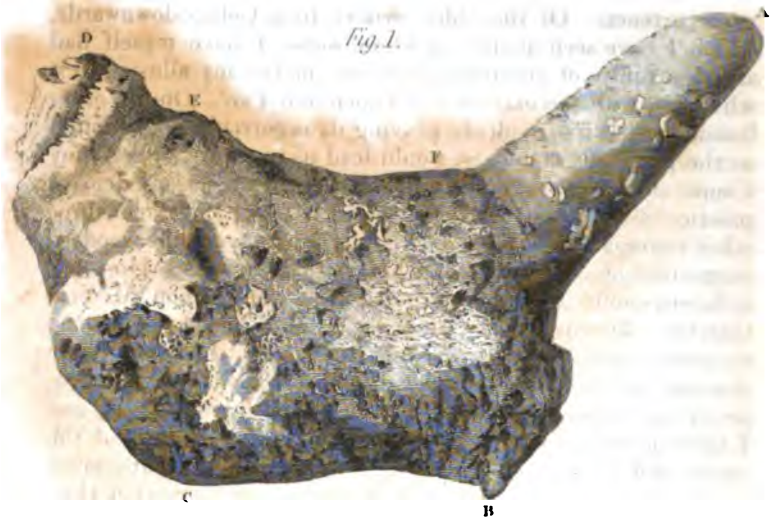
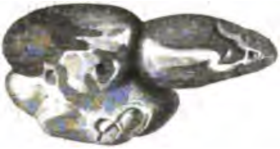


Fig. 1.

Fig. 3.



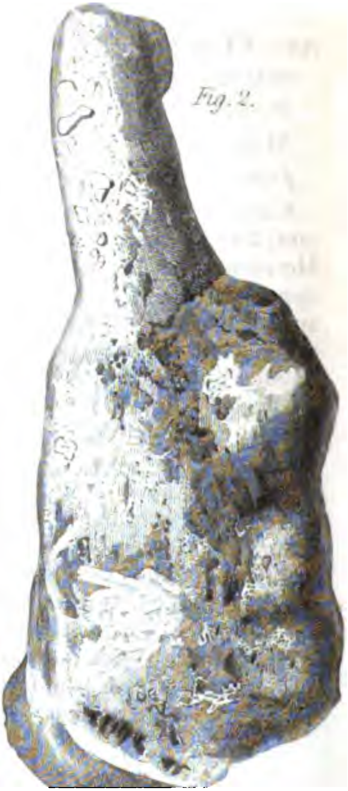


Fig. 2.

Fig. 4.

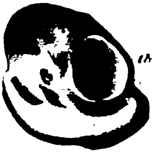
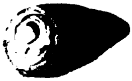


Fig. 5.



its occurrence. Of the older writers, from Celsus downwards, whom I have seen quoted, or whose works I have myself had an opportunity of consulting, not one makes any allusion to it whatever, with the exception of Galen and Paré. On the other hand, the positive evidence proving its occurrence is as limited as the preceding statement would lead us to expect. Sir Astley Cooper has seen only two instances during a most extensive practice of his profession for thirty-eight years; and two or three other examples have been reported by Fizeau and other modern surgeons, one of which, occurring at the Middlesex Hospital, is briefly noticed in Vol. xii. p. 478, of the London Medical Gazette. In this paucity of evidence on a point which some surgeons seem still to consider as undecided, it appears to me that any additional fact, such as I have detailed, may with propriety be offered as a contribution to surgical knowledge; and I have accordingly entered into a more minute account of the nature and circumstances of the accident than its importance could have warranted, had there been no other question than merely regarding the comparative rarity of its occurrence.

Kelso, 18*th Dec.* 1836.

ART. VI.—*Two Cases of Urethral and Vesical Urinary Calculi sucessfully removed by excision.* By JAMES KEIR, M.D. Professor of Materia Medica in the Imperial Academy of Moscow. In a Letter to Dr Craigie. *With a third Case from the Clinical Report of Professor Chelius.*

CASE I.—Demetry Tacovleff, a healthy and robust peasant, 28 years of age, was admitted a patient into Sheremetieff's Hospital on the 20th of January 1835, on account of a large stone which was found to occupy the greatest part of the urethra, and afterwards to extend into the bladder. He gave the following account of himself. From his infancy he had occasionally felt pain in the urethra; but about ten or twelve years back, he began to be affected with pretty strongly marked symptoms of stone in the bladder, such as pain in it, contraction of the yard, particularly at the time of his passing the last drops of urine; retention of urine from time to time; shivering, and fleeting sense of heat over the whole body became more and more frequent. He then perceived a hardness, and as it were a swelling in the perinæum. The other symptoms got more and more strongly marked, and at length two fistulous openings were formed in the lower part of the urethra, through which the urine dribbled off. When he was brought to the receiving room of the hospital, he was bent forwards by the uneasiness arising from his distressing situation, and it was evident from examination by the finger, that a stone filled up nearly the whole urethra, with the exception of about an inch and half from the end of the yard. On examination by the anus it was evident that a pretty large piece of the stone extended through the neck of the bladder into that organ.

From what is said above, it will appear, that it was quite impossible to introduce any instrument into the bladder by the natural passage; it was therefore resolved to lay open the urethra by beginning an incision above the part filled by the stone, and extending it through the fistulous openings nearly to the anus, on doing which a large stone was exposed, which was firmly attached to the urethra and bladder. I then suggested that there was nothing better to be done, than to endeavour to break the stone, and then detach it piece-meal, as it was impossible to extract it whole. On Professor Kildonchefsky's laying hold of it with a pair of forceps, and using some force, it broke off at the neck of the bladder, and the greatest part of the stone represented in the annexed drawing, (Plate I. Fig. 1 and 2.) then came away with the use of the forceps without difficulty. As the neck of the bladder had been enlarged by the stone, it was then found possible to pass up a pair of small forceps by its sides into the bladder, and by its means to break down that part of the stone which was included in the bladder. It was then nearly all extracted without the necessity of farther incision.

The patient has continued to do well since the operation, having never had a bad symptom, and the incision of the urethra seems to heal kindly, though I am not without fear of a fistulous opening remaining, and therefore have repeatedly recommended Professor Kildonchefsky to keep an elastic catheter in the bladder, which, however, he seems to have difficulty in accomplishing, though the silver catheter passes along the canal and into the bladder without difficulty.

1st August. The cicatrization of the incision into the urethra has continued to go on well, though slowly; there still remains an open sore for a space of above half an inch. He is become impatient to return to his village, and has, therefore, by his own desire, been this day dismissed from the hospital. The greatest part of the urine passes off by the natural passage.

That part of the stone which was extracted from the urethra is represented of the natural size and figure in Plate I. Figs. 1st and 2d; the point A lay towards the end of the penis; D to the neck of the bladder, and there the stone gave way, when it was seized by the forceps and some degree of force used. Opposite to the points B and C the fistulous openings described above were remarked. A tape applied at A, and passed along the outer circumference by B and C to D measures 6¾ inches. The thickest part of the body of the stone measured by a tape carried round it from C to E and back to C, is nearly

5 inches, and from B round F a little more than 4⅝ inches. The entire portion represented in Plate I. weighs three ounces, two drachms, fourteen grains. The fragments of the part of the stone included in the bladder weigh three drachms thirteen grains. According to an analysis of a fragment of this last part made under the direction of Professor Reuss of this city, it is composed of the carbonate of lime combined with a small proportion of the urate of ammonia.

Case 2.—Nicolai Michaeleff, a country lad, about 14, said to be affected with stone of the bladder, was brought to Sheremetieff's Hospital on the morning of the 17th April 1835, from a distance of ten versts from Moscow. On examination Professor Kildonchefsky found that a stone was present, not in the bladder, but in, or in the neighbourhood of, the urethra. He made two attempts to reach it by incision, one on the right side of the urethra, and the other in the site of the lateral incision for lithotomy, both without success.

At the time the patient was brought to us, there was considerable swelling, inflammation, infiltration, and gangrene of the scrotum. I saw the case with Professor Kildonchefsky on the evening of the 18th, after he had made the above attempts, and advised him to lay open the scrotum on the side where he believed the stone to be lodged, cutting directly on it, which he did, and then extracted the stone represented in Plate II. Fig. 4, without difficulty. By the first incisions pus was discharged, and there was probably infiltration of urine into the scrotum, prepuce, &c. After the extraction of the stone, an emollient camphorated poultice was applied. From an indentation I observed in the end of the stone I suspected another to be lodged in its neighbourhood; but Professor Kildonchefsky after repeated examination could not detect it.

April 20th. A smaller stone, Plate II. Fig. 5, the end of which adapts itself very exactly to the indentation of the end of the larger one, see Fig. 3, came away through the opening from which the first had been extracted. The swelling, infiltration, and inflammation of the parts have much diminished, and the edge of the gangrened part is distinctly marked. There is not much fever, and the boy seems to be doing well.

On reflecting on the probable way by which these calculi had got from the urethra into the cellular membrane behind it, since the smaller calculus came away, I think it is very likely, that the smaller one was at first just large enough to stick in the urethra, where it had remained, and increased by deposition from the urine to its present size, or nearly so; that in consequence it had prevented the passage of another calculus forming the nucleus of the larger one, which by the gradual deposition of calculous matter from the urine, had increased to its present size, and adapted itself to the larger end of the smaller calculus by the indentation or cavity *a*. In the course of time inflammation and ulceration of the urethra had taken place, and the calculi then escaped into the adjoining cellular tissue behind the urethra.

June 16th. The case has gone on well; the incisions into the urethra have healed kindly; the parts affected with gangrene threw off their sloughs, and having cicatrized, he was dismissed cured this day.

Moscow, $\frac{10}{22}$ *November* 1836.

Case 3.—*From the Clinical Report of Professor Chelius of Heidelberg.*

The foregoing cases by Dr Keir are interesting in illustrating the formation of calculi in the urethra, the evils to which they give rise, and the method of extracting them. The last report of the Clinical Surgical Establishment of Heidelberg, by Max. Joseph Chelius, contains among other important matters, a case so similar in several respects, that I am induced to give a short abstract of it as companion to the cases by my friend Dr Keir.

A peasant, who had previously enjoyed good health, was precipitated in his 30th year from a tree, on a pile standing in the ground, so as to light on the anterior region of the perinæum. Though at this place no external wound could be observed, a large, circumscribed, hard, very painful swelling forthwith arose. The patient could without difficulty betake himself to his house, but soon observed that in voiding urine, which was very painful, though otherwise natural, much blood was discharged; and as this progressively diminished, purulent matter and mucus mixed with a little blood was discharged. The swelling gradually subsided, the pain of the tumour abated in the course of three weeks, and along with it the discharge of purulent matter, and the pain in making water; but the mucous secretion with considerable sensibility of the tumour remained. At a later period, pains in making water ensued; the stream was often suddenly interrupted and returned, after the patient changed in different modes the position of his person; while often unavailing pressure in making water, scalding and a peculiar tickling sensation in the glans, and at the posterior part of the urethra, obliged the patient to press it together, and draw it from the body. These symptoms alternated as to their duration and violence, so that the patient could often void his urine, though always mixed with mucus, perfectly well, until the 6th of March 1834, a space of twenty-four years. At this period, when the patient was now in his 55th year, the discharge of urine was suddenly interrupted without known cause, and violent pains in the seat of the swelling, but particularly in the bladder, which was in a state of increasing distension, and in the sacrum and legs, arose. Frequently repeated attempts by a surgeon to introduce a catheter were unsuccessful, and the patient, on the 10th of March 1834, applied for assistance at the Chirurgical Clinical Establishment.

The catheter was introduced with difficulty, as it was resisted by a solid body at the place corresponding to the swelling in the perinæum, and must have been conveyed a considerable space over a stony concretion, and it gave issue to a large quantity of urine mixed with mucus and some blood. Next morning, when the patient was brought into the clinical ward and examined, Professor Chelius recognized the following circumstances.

The hard oval swelling, which was as large as a hen's egg, circumscribed, and immediately beneath the skin was quite unchanged, was situate at the posterior and upper part of the scrotum, between this and the perinaeum, admitted of being moved to and fro, was painful on violent pressure, and was filled at its posterior upper part with small stones, and at the anterior part was distended with large stones, which could be easily thrust to and fro. The introduction of the catheter showed the impediment already indicated; and hence the diagnosis of scrotal concretion, which communicated by an opening with the urethra, was readily made. He thought it probable that by the contusion of the perinæum, in the fall on the pile, the wall of the urethra had been lacerated, in consequence of which urinary infiltration, and then calculous concretion in the cellular membrane subjacent to the urethra took place. But it was considered singular that the swelling should not have increased in size for years.

The operation for the removal of these concretions was performed on the 10th of March 1834, five days after the occurrence of complete retention of urine.

The patient was placed in the same position as in the lateral operation. A catheter was then introduced, and carried to the middle of the swelling. Then the skin by an incision passing over the middle of the tumour through its whole length, and the cyst, consisting of thickened cellular membrane, firmly enclosing the stone, were successively divided by the aid of the probe-pointed bistoury, and the stones closely lying together were extracted by the finger and the scoop. After twenty-seven stones had been thus removed, in the bottom of the sac was found the catheter, which could now easily be carried forwards into the bladder. The size of the opening into the urethra measured more than half an inch.

The catheter being left in the urethra and bladder, the patient was placed in bed on the side, and the wound was covered with a sponge dipped in cold water, which was from time to time changed. No unfavourable accident ensued. The edges of the wound were accurately applied to each other; and though after some days the urine, which came away freely by an elastic gum catheter, showing a copious mucous precipitate, began also to be discharged in smaller quantity by the wound, and, notwithstanding every attention to cleanliness, a pustular eruption appeared over the whole scrotum,—the wound cicatrized, amidst several changes of the catheter to the end of the month, completely, and without leaving the slightest hardness or swelling. On the 7th of April the catheter was removed, and, as afterwards to the 14th of April, the urine came away freely and without any difficulty by the urethra, the patient took his leave as cured.

The formation of scrotal and perinæal urinary concretions is most frequently observed after the previous performance of the lateral operation of lithotomy, and the persistence of incomplete internal urethral *fistulæ*, and complete urinary *fistulæ* of long continuance. In none of the cases known by the author was so great a number of concretions found as in the case now communicated.

The twenty-seven stones varied much in size and shape, but agreed in colour and chemical composition, and corresponded with their whole smooth polished sides so accurately, that when joined they appeared to form a single oval mass. (One urinary concretion, which had been long inclosed in the neck of the bladder, and which had been extracted by an incision in the perinæum without the possibility of introducing the sound, and which presents a similar smooth surface, is in the possession of the author.) The *calculi* extracted on the present occasion varied from the size of a pea to that of a filbert, were of multiplied forms, had a pale dirty-yellow outer surface, with reddish spots, and in several places of their smooth surfaces presented whitish shining crystalline bodies. They consisted of an outer white thick layer with pale yellow brown concentric *striæ*, and an inner layer consisting of white, dark-brown, thin concentric *lamellæ*, which enclosed also a coloured nucleus. Both layers were moderately lacerable.

According to the chemical analysis performed by Professor Geiger, the outer layer of the principal mass consists of phosphate of soda, phosphate of magnesia and ammonia, a little carbonate of lime, animal matter, especially extractive, vesical mucus, and a little fat. The inner layer consists chiefly of oxalate of lime, with a trace of phosphate of lime, animal matter, probably from the contact of blood, vesical mucus, and some more fat than the outer layer. These concretions, therefore, differ in no respect from those which are formed in the kidneys or bladder. It is remarkable that the nucleus consists of oxalate of lime with a trace of phosphate of lime,—a fact which contradicts the opinion, that oxalate of lime does not alone form the nucleus of the stone, and which also forms an exception to the established rule, that oxalate of lime, in a nucleus with uric acid and urate of ammonia, is mingled in the layers with the phosphatic salts.

The formation of these stones may have been occasioned by the occurrence of an acid foreign to the natural composition of the urine, which again may have been the result of the early manner of living, but particularly through the prohibition of all heating articles of food, and the use of vegetable diet at the time after the injury, and while the pains in the discharge of urine were considerable.[*]

ART. VII.—*Description of the Diseased Joints in the Museum of the Army Medical Department at Chatham.* By GEORGE GULLIVER, Assistant-Surgeon to the Forces, &c.

THOSE who are acquainted with the anatomical museum of the Army Medical Department are aware that nothing less than a new edition of the catalogue would be required to give an adequate account of the collection. But, however desirable such a work may be, the period of its publication is at present uncertain. The pathological part of the museum has now become of great extent and importance, presenting a body of facts illustrative of the diseases of soldiers, unequalled in this country; and although the more common affections occupy a space commensurate with their frequency, it contains many specimens of rare occurrence, and some which are probably unknown. Descriptions of different sections of the collection will therefore be useful to those who are investigating the diseases of the army; and I would venture to hope that a mass of facts thus brought together, and appropriately arranged, may not prove altogether uninteresting to pathological anatomists generally.

The affections of the locomotive organs are first to occupy our attention. The diseased joints, which form the subject of the present communication, although by no means so numerous as many other parts of the collection, will amply repay the trouble of inspection. They may all be referred to one or other of the following heads, namely—

Section I. Affections of the synovial membrane.
Section II. Affections of the cartilages,—
  A. Hypertrophy.

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[*] Medizinische Annalen herausgegeben von den Mitgliedern der Grossherzoglich Badischen Sanitäts-Commission in Carlsruhe. Erster Band Erstes Heft. Heidelberg, 1836.

B. Atrophy—softening.
C. Ulceration, principally affecting the synovial surface.
D. Ulceration, principally affecting the aspect next the bone.

Section III. Affections of the bones.
A. Eburnation of the surface—modifications of form in the articular extremities.
B. Caries of the articular surfaces, the bones otherwise sound.
C. Caries, complicated with partial necrosis, of the articular surfaces.
D. Caries of the articular extremities, attended with a remarkable disuse of the external surface of the bones.
E. Caries of the articular extremities, attended with disease of the cancellous structure,—the bones softened, and their earthy part diminished.
F. Anchylosis.

Section IV. Affections seated principally in the tissues external to the joint.

Section V. Injuries.

In this arrangement I have been guided by anatomical considerations, partly on account of the convenience and simplicity of the method, but chiefly because I have observed that students, while examining the natural structure of a tissue, are often led to inquire with interest concerning the morbid changes to which it may be liable. In the descriptions, I have endeavoured to pursue the plan upon which the arrangement is founded, attending to the structure most obviously implicated, as actually visible in the preparation, rather than to any theory concerning the original seat of the disease, or to those constitutional affections which are usually regarded as favouring its production; subjoining when possible, the history of the case, together with such explanatory remarks as appeared necessary. Thus to a classification having constant reference to the organs or tissues, it will be easy to add the advantage of examining the various elementary forms of disease in the order of their natural relations, or to study those groups of morbid changes which are often comprehended under a single term in the systems of nosology. These remarks are intended also to apply to other divisions of the collection, descriptions of which will shortly follow the present paper.

SECT. I. The specimen of rounded pedunculated bodies hanging from the synovial membrane is probably very rare in the elbow-joint;—the few instances of this curious affection, hitherto recorded, having, I believe, been confined to the knee.

SECT. II.—Here are some interesting examples of *hypertro-*

phy, *atrophy*, and *softening* of cartilage. These changes appear to originate in this tissue,—are often long confined exclusively to it,—and are probably altogether independent of inflammatory action. Of the former, I am not aware of any description in the books of pathology. Numbers 71 to 74 inclusive, mark specimens of this affection in the knee-joint, showing the cartilage of the patella hypertrophied, so as to present a transverse ridge extending nearly across the articular surface of the bone. The synovial aspect of the thickened part is considerably elevated, and perfectly smooth, except where its continuity is interrupted by the fissures with which it is sparingly pervaded, splitting the cartilaginous fibres into bundles of irregular size and shape, each packet, however, retaining the natural gloss and consistency of true cartilage. When a section of the thickened portion is examined with a glass of an inch focus, the increase appears to be confined to the homogeneous substance intermediate to the fibres, contrary to what takes place at a more advanced period of the disease, when the former disappears, and the latter, losing entirely their lateral connection, become separate, hang loosely into the joint, and are even enlarged. In No. 68, the hypertrophy is partial, having been succeeded in great measure by the later stage of atrophy and softening.

It is remarkable that all these cases occurred in soldiers who died of pulmonary consumption, none of whom, as far as could be ascertained, had ever complained of their joints. Their extreme ages were 24 and 32. It may be conjectured that the change under consideration is preliminary to some diseases of the articular cartilages which have been frequently observed, namely, their wasting and fibrous degeneration.

Of the atrophy, or absorption of cartilage, so often seen in the joints of old persons, and of the deformity with which it is occasionally connected, an excellent example is afforded by a knee-joint, the different parts of which are numbered, 61, 64, and 65, in this section, and 62 and 63 in the following one. This articulation appears to be closely allied to that described by Dr Hodgkin in the catalogue of the museum at Guy's Hospital, No. 1328. In the joint now before me, while parts of the articular surfaces of the femur and tibia are completely divested of cartilage, that of the patella is simply thinned, and slightly villous on the surface. As the hypertrophy of cartilage, and separation of its substance into irregular masses, was conjectured to precede its softening and fibrous degeneration, so is it probable that the latter condition is preparatory to its complete atrophy. The preparations in the subsection B, show the delicate villous appearance, with slight thinning of the cartilage, at an early period of the affection; then still further loss of substance, with the fibres more distinctly separated and developed, as if hypertrophied; and lastly, the complete wasting which leaves the articular surface of the bone perfectly naked.

Some eminent continental pathologists regard these changes as imperfect reproductions of cartilage, or true cartilaginous cicatrices,—an opinion at variance with the history of the preparations before us, none of which offer evidence of previous inflammation or ulceration; nor indeed does it appear that any disease was ever suspected in these joints before it was disclosed by examination after death. These affections have often been considered as a consequence of rheumatism, and still more frequently as peculiar to old age; but I have found the articular cartilages healthy in subjects who had long been afflicted with severe rheumatic disease, and it will be observed that some of the preparations in the collection were taken from a soldier aged only 32. They would appear to afford examples of wasting from defective nutrition, allied probably to certain changes in the cornea which are known to proceed from this cause, and which are also unattended by inflammation or the formation of pus.

The simultaneous occurrence of this change, not only in corresponding joints, but also in the same parts of the cartilages of such joints, is a remarkable fact, which has been forced as it were on my attention, by a somewhat extensive series of observations. However the affection may terminate, such is the frequency in its early stage, of the coincidence alluded to, that when we find the changes described in the present and preceding subsections, on a particular part of the patella or condyles of the femur for instance, the alteration will almost always be found in a corresponding situation of the same cartilage in the opposite joint. The circumstance is curious, and leads to an interesting branch of inquiry; but it is probably not peculiar to the articular cartilages. Of the molar teeth it may be remarked, that decay is prone to attack them in pairs, either simultaneously or successively.

The preceding remarks are confined to a brief view of the changes exhibited by the preparations. It was my design to have attempted a more extensive and systematic examination of a subject, which appears to me to involve some important considerations concerning the physiology and pathology of the articular cartilages. But this I defer for the present.

Whatever may be the prevalence of malingering among soldiers, when it is considered that many of these changes of structure in the articular cartilages were manifested by no apparent symptoms during life, it appears to be an obvious inference, that we should be slow in entertaining unfavourable suspicions of men who complain of inability to sustain the fatigue of marching with the heavy burden of a knapsack. It may be observed that the disease, when it occurs in young subjects, generally attacks those of lymphatic temperament, and its diagnosis is not so difficult as might be imagined,—a circumstance which should encourage us to institute a patient inquiry in this class of cases. In the dead body of a man, whose lower limbs were extremely well formed, which I examined a short time since with Dr Stephenson of Rochester, I was enabled to point out that this affection of the cartilages certainly existed in the left knee, and probably to a less extent in the right also,—a prediction which was completely verified by the dissection; and I have at this moment under my care, in the surgical division of the general hospital, a soldier in whose knee the disease is evidently very far advanced. If the joint be briskly moved while its anterior part is grasped by the hand, the palm pressing firmly on the patella, even a slight inequality of the opposing cartilages will become perceptible by a grating, the detection of which is not a little facilitated by the absence of any considerable pain during the procedure. When the alteration of structure is confined to a small part of the cartilage, the grating or crackling may be expected to correspond to a certain degree of flexion or extension of the joint. In the more advanced cases, the sensation communicated to the hand is very remarkable and characterestic, and hardly to be mistaken. It may be worthy of consideration, whether mediate auscultation in these cases might not enable us to ascertain still more accurately the condition of the cartilaginous surfaces. *

Sect. III.—There is a class of cases in which the atrophy of the cartilages and eburnation of the articular surfaces are generally considered as preliminary to very remarkable changes of form, which the extremities of the bones undergo. That all these changes are often complicated is indisputable, but the order of their occurrence does not appear at present to have been accurately determined. In opposition to the general opinion, I have sometimes observed the articular surfaces of the bones much altered in shape, while their incrusting cartilages remained entire, of which No. 31 affords a well marked example in the hip-joint. In No. 26, Dr Davy's analysis shows that the porcelain-like articular surface, contrary to what might be supposed from its stony texture, contains a less proportion of earthy matter than the shaft of the bone,—a fact in accordance with the compara-

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* In the subsection C, the history belonging to Nos. 75—78, is most worthy of notice, as furnishing a well marked instance of scrofulous matter in the femoral vein, in connection with scrofulous abscesses about the knee; a phenomenon, I presume, of rare occurrence. The observations of Arnott, Lee, Rose, and M. Dance, have given great interest to cases in which pus is found in the veins, and the general importance in many diseases, of heterologue products in the blood-vessels, has been still further shown by the researches of M. Andral and Mr Kiernan.

tive composition of the bones of the blood and of the cart-horse a similar excess of animal matter existing in the dense and ivory-like substance of the former. This has been mentioned to me by Dr Davy, as the result of an analysis made many years ago by Dr Granville; and it may be added, that he found the bone of the blood-horse stronger, more compact, and yet lighter than that of the cart-horse. How little dependence is sometimes to be placed on the mere physical characters of a bone, in forming a judgment of its chemical constitution, is still further shown by Dr Davy's analysis of a diseased tibia, the upper part of which, although affording but little resistance to the scalpel, was found to contain an excess of earthy matter.

In the sub-section C it will be seen how frequently ulceration or caries of the articular surfaces is attended by partial necrosis of the exposed cancellous structure. The sub-section E affords some examples of softening of the bones, and diminution of their earthy part, described by Sir Benjamin Brodie as commencing in the cancelli. As a contrast to these, in the sub-section D are several remarkable specimens, in which the periosteal surface of the bones, outside the articulation, has been the seat of extensive disease, the frequency of which arrested my attention while arranging the preparations. By reference to the descriptions it will be seen that it consists in an abundant and irregular deposition of adventitious osseous matter on the superficial part of the bones, extending from the margins of the joint to a considerable distance from it. An affection of such frequent occurrence, and of such well marked character, can hardly be considered merely as an accidental complication. On the contrary, I have seen cases in which this disease preceded, or apparently produced, ulceration of the articular cartilages, instances of which I shall have to notice on a future occasion.

SECT. IV.—In the example of gouty concretion in the hand, although some of the cartilages are incrusted with a very thin layer of this substance, its principal seat is in the cellular tissue external to the periosteum and to the articulations, in the substance of the tendons, in the muscles, and in the fibrous part of the true skin. The sheaths of the tendons appeared to be unaffected, as well as the bursæ, one of the latter having been formed between a joint of the thumb and a mass of the gouty concretion.

SECT. V.—We have so rarely an opportunity of examining by dissection the state of the part concerned in recent dislocations, that the examples of this description of injury in the elbow and hip-joints are well worthy of notice.

The numbers preceding the descriptions are those by which the preparations are known in the museum, which it was thought better to retain at a slight inconvenience, than to alter them in conformity to the arrangement observed in this paper.

SECT. I.—AFFECTIONS OF THE SYNOVIAL MEMBRANES.

55. Condyles of the femur with part of the capsule of the knee-joint. The synovial membrane is thickened, and much coagulated lymph is deposited on its loose surface. The cartilage is unchanged.

44. Knee-joint, exhibiting adhesions between the articular surfaces of the tibia and femur, and a delicate membraniform layer on the cartilage of the inner condyle of the latter. In the centre of the patella the cartilage is seen to be healthy, and occupying the bottom of a cavity, the sides of which appear to be formed by the synovial membrane thickened and protruded over the circumference of the articular surface of the bone.

From a middle aged female, of whom it is reported that it was considered necessary to remove the limb, but as she objected to the operation, rest and counter-irritants were had recourse to, and she ultimately recovered with a useful limb.

18. Knee-joint, in which the synovial membrane is throughout thickened, and encroaching over the margins of the articular cartilages. A small film of coagulated lymph presents on one part of the articular surface of the femur, but the cartilages appear to be entire.

Removed from a boy, aged 10 years, who had suffered from the disease upwards of eight months.

6. Ankle-joint, in which the synovial membrane is thickened, and a layer of coagulated lymph is deposited on the articular surfaces.

Edward Hanslow, aged 24, 41st Regiment, had been stung on the outer ankle by a venomous insect in India, the bite from which degenerated into an ulcer. On his arrival at Fort Pitt, a year after the injury, great swelling of the foot had taken place, and the slightest motion of the joint caused exquisite pain. The constitutional symptoms being urgent, the limb was amputated, and the man recovered.

3. Elbow-joint, exhibiting an abundant deposit of coagulated lymph on its articular surfaces. The cartilages appear to be entire.

27. Wrist-joint, in which the synovial membrane is generally thickened, and projecting over the margins of the articulation. The cartilages are entire, but partially covered by a delicate membranous exudation, and cellular membranous bands extend, in one situation partially, and in another entirely, across the articular extremity of the radius.

This joint exhibits the commencement of one form of anchylosis.

Removed by operation from D. Morgan, aged 23, 28d Regiment, who had for about six months been affected with swelling of the wrist, accompanied with sinuous alcers in the surrounding soft parts, and hectic fever.

40. Knee-joint, the synovial membrane of which is throughout very thick and pulpy. On a part of the patella the cartilage appears healthy, but the articular surfaces are elsewhere completely invested by a layer, similar to the thickened synovial membrane, from which the morbid growth appears to have extended. The crucial ligaments and semilunar cartilages are also obscured by the diseased mass.

Removed by amputation from C. Macguire, 24th Regiment, aged 25. The disease was stated to have been induced by a fall, and to have been twelve months in progress. When recent, the synovial membrane was described as a brownish pulpy mass; the bones were sound; there were many abscesses around the joint. The disease appears to be an example of that described in the third chapter of Sir B. Brodie's work.

50. Proximal end of the radius, around the neck of which numerous rounded tumours are hanging into the articular capsule, some by fine and others by broader pedicles. These growths are of the colour and consistence of fat, varying in size from an eighth to a third of an inch in diameter; they have a smooth surface, continuous, and apparently identical, with the synovial membrane. The articular cartilage is entire, and presents many filiform processes arising from its surface.

From a man of the 73d Regiment who died of gangrene of the foot. The motions of the joint were impaired during life.

60. A flattened cartilaginiform substance, about three quarters of an inch long and a-half broad. Its surface is very smooth, apparently from a covering of synovial membrane, and it is softer in texture than true cartilage.

From the knee-joint of Mr Sullivan, aged 30, 7th Hussars, who had for some time complained of weakness and slight pain in both knees, aggravated during a march. The joints were not altered in appearance, nor were their motions impeded. The left was the most troublesome, and the body shown in the preparation could sometimes be felt on the inferior border of the inner condyle of the femur, but would elude the touch if the joint were not kept extended. The cartilage was fixed and cut down upon in the usual manner, when it was found to be hanging loosely into the cavity of the joint, being connected to the synovial membrane by a broad base, which was divided by a bistoury. About half an ounce of synovia escaped. The wound healed by the first intention, no untoward symptom having occurred after the operation. He was discharged from the service three months subsequently, with but slight improvement in the joint.

58. Section of a roundish cartilaginous body, about an inch in diameter. Its surface is polished and irregularly nodulated, and its centre presents a portion of osseous matter about the size of a horse-bean.

59. Counterpart to the preceding, dried, showing the form and size of the osseous nucleus.

E. Sullivan, aged 44, 57th Regiment, had long been lame in the left leg, in consequence of an injury to the knee received some years previously. The lameness had latterly increased, the motions of the joint were diminished, and performed with difficulty, and it became painful after exercise. The body shown in the preparations was situated loosely in the upper part of the joint, presenting frequently on either side of the upper part of the patella, beneath the quadriceps extensor muscle. It was easily fixed on the inner side, and excised in the usual manner. Some inflammation and suppuration took place above the wound, apparently not implicating the joint. The man did well, and walked with more ease after than before the operation.

48. A subcutaneous bursa enlarged, and its parietes thickened.

SECT. II.—AFFECTIONS OF THE CARTILAGES.

A. *Hypertrophy.*

71. Patella, exhibiting a thickening of the cartilage, extending transversely across the centre of the articular surface. The surface of the swelled cartilage is unchanged, except where its continuity is irregularly interrupted by fissures penetrating deeply into its substance.

James Hennen, aged 31, was admitted with pulmonary consumption, some symptoms of which had affected him for three years. He was delirious three days before he died. On dissection, tubercles and vomicæ were found in the lungs; there was softening of the brain in the neighbourhood of the lateral ventricles, and a suppurating tubercular mass in the cerebellum.

72. Patella, exhibiting a transverse fissure ridged on the articular surface, similar to that described in No. 71.

From the same subject as the preceding.

73. Another specimen of the same change in the articular cartilages of the patella as that shewn in 71 and 72.

74. Another specimen similar to the three preceding. In this one, a transverse section of the bone and cartilage has been made, in order to exhibit the extent to which the latter is thickened.

From William Wells, aged 24, 32d Regiment, who died of pulmonary consumption. There was no alteration in the external appearance of the joints, and they contained the usual quantity of synovia, the synovial membrane appearing perfectly healthy.

68. Patella, a part of the cartilage of which is thickened, and another part thinned, softened and villous on the surface.

From the same subject as No. 66.

B. *Atrophy—Softening.*

66. Knee-joint, exhibiting a circumscribed softening and thinning of cartilage on the external condyle of the femur, and on a corresponding point of the patella, nearly exposing the subjacent bones. The bases of the depressions present a villous appearance.

J. Finnan, 1st Royals, aged 32, died at the lunatic asylum, Fort Clarence, of tubercular consumption. Previous to his admission to that establishment he had been three years confined to bed after an attack of remittent fever. During the whole period of his mental disease, he was listless and sullen, in consequence of which he was indisposed to move. The lower limbs became emaciated, and partially paralytic. There was no alteration in the external appearance of the joints; the synovial membrane was healthy, and they contained about the usual quantity of synovia.

67. Condyles of the left femur, presenting a change in the cartilage, similar in character and situation to that described in No. 66, but less advanced.

From the same subject as No. 66.

69. Upper articular extremity of the tibia, the cartilage of which is softened and attenuated; and in one of the lunar depressions, the villous appearance is very distinct.

From the same subject as No. 66.

65. Patella, exhibiting softening and attenuation of its articular cartilage, and a delicate villous or velvetty appearance of its free surface.

For an account of the case see No. 61.

64. External semilunar cartilage of the knee-joint, softened, ragged, and approaching in character to cellular tissue.

From the same joint as the preceding (No. 65.)

61. Condyles of the femur, in which there is a deficiency of the greater part of the cartilage of the outer condyle, the exposed bone being slightly smoother than usual, and the margins of the remaining cartilage even and very abrupt. The cartilage is elsewhere of the usual thickness and texture, but numerous delicate filiform processes project from its surface towards the cavity of the joint.

From a man about 78 years of age, whose knee was deformed, being much projected inwards. He walked tolerably well, and simply attributed the deformity to the gradual effects of hard work. He broke stones on the road up to the period of his admission into the poor-house, with diseased bladder, of which he died. The two preceding preparations, No. 65 and 64, are from the same subject.

70. Articular extremity of the metacarpal bone of the great toe, exhibiting a thinning of the articular cartilage, and a partial separation of it from the subjacent bone.

William Sage, 39th Regiment, aged 50, died of chronic dysentery. He was invalided from India, in consequence of chronic rheumatism and being worn out.

The joint contained the usual quantity of synovia. All the other joints of the extremities were examined and found to be sound.

30. Distal end of the thigh-bone, presenting a small but well marked depression on the cartilage of the inner condyle. The base of the depression is smooth, and formed of a very thin layer of cartilage; its margins are also smooth and rounded.

From a middle aged man who died of dysentery, contracted in the West Indies. After his death, it was observed that the knee-joint was contracted, and could not be extended by ordinary force; but nothing further is known about the case.

The depression, which differs in many respects from the ordinary atrophy of articular cartilages, may probably be regarded as the cicatrix of an ulcer.

C. *Ulceration on the Synovial aspect.*

13. Hip-joint, in which there is ulceration of the cartilage of the femur, an abundant deposition of lymph around the intracapsular portion of its neck and in the acetabulum. The latter is nearly filled up, but the head of the femur is not dislocated. The soft parts around the joint are much thickened.

Robert Tallow, 7th Fusileers, aged 23, contracted the disease from exposure to wet and cold. After seven months treatment, he sunk under colliquative diarrhœa. On dissection, slight ulceration of the mucous membrane of the small intestines was found.

12. Elbow-joint, showing ulceration of the cartilages, irregular deposit of coagulated lymph on the ulcerated surface, and thickening of the synovial membrane.

Richard Baker, aged 23, 4th Regiment, had been twelve months affected with the disease, of which he was relieved by amputation of the limb. The case was considered to be of a scrofulous nature.

19. Ankle-joint, exhibiting ulceration of the cartilages, and coagulated lymph on the eroded surfaces.

Removed from a lad, in whom the disease was consequent on injury.

34. Ankle-joint, exhibiting ulceration of the greater part of cartilaginous surfaces, extending to the subjacent bones. The cartilage around the ulcerations appears to have suffered no change; its margins are smooth, and it is firmly adherent to the bone. The exposed part of the latter, between the ulcer on its surface, and the smooth edge of the cartilage, appears to be natural. The posterior part of the capsule presents a layer of coagulated lymph on its synovial aspect. The ulcerated surface of the bones, as well as the adventitious matter on the synovial membrane, is shown by injection to be very vascular.

James Cassidy, 56th Regiment, aged 28, of strumous habit, was several months confined in hospital with pulmonary consumption, of which he died. Some weeks before death, a fistulous ulcer formed in the integuments of the outer ankle, from which issued a copious sanious discharge, sometimes mixed with curdy matter.

51. Ankle-joint, exhibiting ulceration of the cartilages, deposition of coagulated lymph on their surfaces, and on the synovial membrane.

William Massey, 48th Regiment, admitted with an ulcer communicating with the cavity of the joint. The limb was amputated, and the man did well.

21. Ankle and tarsal joints, exhibiting ulceration of the cartilages between the navicular bone and astragalus, and between the cuboid bone and *os calcis.* The cartilages of the ankle-joint are entire, but on that of the astragalus there is a deposition of lymph.

William M'Cardiffe, 39th Regiment, aged 20, was admitted with disease of the right hip-joint, which was relieved by the ordinary treatment. Some months afterwards, the disease shown in the preparation supervened, sinuses formed, accompanied by hectic fever, and the limb was amputated. Soon after the healing of the stump, pulmonary consumption took place and terminated fatally.

1. 192. Ankle and tarsal joints, exhibiting destruction of the cartilages between the astragalus and *os calcis*, and the cuboid bone. A small quantity of coagulated lymph appears on the surfaces of the ankle-joint, but its cartilages are entire. The ulcerated surfaces are generally covered by very vascular coagulated lymph, as shown by the injection, and a portion of the cancelli of the *os calcis* is exposed and apparently necrosed.

From John Ward, aged 31, 98th Regiment, who attributed the disease to a sprain. The limb was amputated, and the man became very healthy afterwards.

1. 151. Section of a foot, exhibiting coagulated lymph between the astragalus and navicular bone, and complete destruction of the cartilages in this situation.

James Croker, 87th regiment, aged 21, had his leg amputated on account of this disease, and afterwards did well.

48. Knee-joint, presenting ulceration of the cartilages extending to the subjacent bone, the cancelli of which are exposed. On the posterior part of the condyles of the femur, and anteriorly between them, a small extent of the cartilage is entire.

From John Murray, 47th Regiment, aged 44, an old Indian soldier, who attributed the disease to exposure to wet and cold on his homeward passage. The limb was amputated; but he had disease of the liver, and died of general dropsy two months after the operation.

75, 76, 77, 78. Knee-joint, the surfaces of which are throughout invested with coagulated lymph. The cartilages are entirely destroyed, except a small extent on the posterior part of the condyles of the femur. The disease extends into the articulation between the tibia and head of the fibula.

From R. Transom, aged 21, of strumous habit. The disease was of about five months duration. Some time before death, a succession of abscesses appeared about the joint, discharging a thin curdy matter. On dissection, general tubercular disease was found in the lungs, in the omentum and mesentery, and on the surface of the intestines. The femoral vein was thickened and diseased throughout, containing thick bloody matter mixed with puriform fluid. About three inches below the crural arch the vessel was much enlarged, and obstructed by a dense caseous substance, which extended nearly to the termination of the iliac vein.

D. *Ulceration on the aspect next the bone.*

4. Hip-joint, exhibiting ulceration of the cartilage, destruction of the round ligament, and deposition of coagulated lymph in the acetabulum. On the head of the femur, the ulcerative process has taken place extensively between the bone and the cartilage, the latter retaining its smooth synovial surface, although in great part separated from the former.

Thomas Stevens, 19th Lancers, died after a sojourn of nine weeks in hospital. He attributed the disease to having kicked his foot against an inequality in the ground.

56. Pelvis with the coxo-femoral articulations, exhibiting ulceration of their cartilages, destruction of the round ligaments, and an irregular deposit of coagulated lymph on the inner surface of the synovial membrane. The cartilage is in many places separated from the bone, particularly from the right femur, where the greater part of the cartilage is detached in one continuous layer. The thigh bones are much wasted.

From William Cowan, aged 7, who had suffered from the disease for eighteen months.

32. Hip-joint, presenting ulceration of the entire surface of

the cartilages. Some shreds hanging loosely from the head of the femur, appear to be partly the remains of the cartilage, and partly coagulated lymph. The *ligamentum teres* is softened and shreddy, separated from the thigh-bone, but still retaining connection with the acetabulum. The capsule is much thickened.

John M'Cully, 55th Regiment, aged 22, had been affected with the disease for upwards of three months, when he died exhausted by hectic. The limb was latterly attenuated, apparently shortened, and slightly inverted; and an abscess, which contained turbid scrofulous matter, formed behind the great trochanter. On examination, the acetabulum was found full of brick-coloured grumous fluid, and the ulcerated surface presented the highest vascularity.

20. Elbow-joint, exhibiting caries of the upper end of the ulna, and of the inner condyle of the humerus, a slight film of coagulated lymph on the cartilage of the outer condyle, and thickening of the soft parts around the articulation.

John Bedford, 74th Regiment, aged 18, of a scrofulous habit, admitted with the disease attended with high fever, the affection of the joint having commenced four months previously, in the form of an abscess on the inner condyle. The arm was amputated with a favourable result.

9. Hip-joint, in which the entire surface of the cartilages is ulcerated, and the synovial membrane thickened. The head of the bone is enlarged, and the acetabulum presents a corresponding increase of size. No part of the round ligament, or of its pit in the head of the bone are perceptible.

The disease was attributed by the patient to a fall eight months previous to his admission into hospital.

SECT. III.—AFFECTIONS OF THE BONES.

A. *Eburnation of the surface.—Modifications of form in the articular extremities.*

62. A section of the outer condyle of the femur, exhibiting a portion of its articular surface somewhat smoother than usual, and its whole margin slightly expanded by a deposition of new bone.

A small section from No. 61, to show the state of the bone from which the cartilage had disappeared.

63. Upper end of the tibia, the outer articular surface of which is slightly polished, and much depressed, particularly towards its outer margin.

From the same subject as the preceding.

The obliquity and polish described above, corresponding to the deficiency of the cartilage on the outer condyle of the femur, as shown in No. 61, and to the softened semilunar cartilage No. 64.

26. Upper end of the humerus, the head of which is flatten-

ed, very hard, and highly polished. Around this ivory-like part there is a deposit of adventitious bony matter.

From Dr Davy's analysis of the shaft, of the adventitious bone, and of the polished ivory-like articular surface, the following results appear, viz.

Composition of the shaft,

Phosphate of lime, &c.	58.8
Animal matter,	41.2
	100.0

Composition of the polished articular surface,

Phosphate of Lime, &c.	54.2
Animal matter,	45.8
	100.0

Composition of the new bone, around the articular surface,

Phosphate of Lime, &c.	48.8
Animal matter,	51.2
	100.0

31. Hip-joint, exhibiting shortening of the neck of the thigh-bone, expansion and flattening of its head, and a corresponding alteration of form in the acetabulum. The cartilage on the head of the bone is of the usual thickness, as is also that of the acetabulum.

A section of the femur has been made, and the counter-part is to be found among the diseases of bone, Div. 1. No. 108.

Case of Fox, described by Mr Gulliver,—Edin. Med. and Surg. Journ. No. 128.

52. Hip-joint, presenting shortening of the neck of the thigh-bone, flattening and expansion of its head, with a corresponding change of form in the acetabulum. The head of the bone is enlarged to a greater degree than the acetabulum, and the latter is very shallow.

Case of Lynn, described by Mr Gulliver,—Edin. Med. and Surg. Journ. No. 129.

46. Great toe, directed outwards beneath the other toes, at a right angle with its metacarpal bone.

From a lunatic pensioner, aged 73.

B. *Caries of the articular surfaces, the bones otherwise sound.*

47. Head of the thigh-bone, the surface of which is throughout carious.

Henry Warrington, Waggon Train, aged 19, had his horse fall on him four months previous to his admission into hospital, and injured the right side of his chest. The hip disease afterwards appeared, suppuration took place in the joint, and the case proved fatal. On dissection, there was much tubercular deposit found in the lungs.

24. Hip-joint, generally carious. The head of the femur is

partly destroyed; it is displaced downwards and forwards so as to incroach on the thyroid foramen, and the acetabulum is remarkably extended in this direction. Some adventitious bones deposited on the inferior surface of the neck of the femur, near to its junction with the shaft.

1. Hip-joint, in which the ulcerative process has extended from the cartilages deeply into the cancelli of the bones, and completely through the bottom of the acetabulum. The round ligament is destroyed, and the synovial membrane and contiguous soft parts are thickened and consolidated together.

2. Hip-joint, the surfaces of which are throughout carious. Some new bone is deposited on the external surface of the bone, at the posterior and upper part of the acetabulum.

Robert Cooper, 10th Hussars, was twenty months under treatment for the disease. It was caused by a fall from his horse.

1. 179. Hip-joint, throughout carious. A small portion of the bottom of the acetabulum is destroyed, and around the outer part of its margin a considerable quantity of adventitious bone is deposited, which extends in the form of a crust over nearly the whole *fossa ilii.*

From James Law, 92d Regiment, aged 27. The disease was of about twenty months duration. Suppuration was very abundant for some time before death.

1. 181. A section of the head and neck of the thigh-bone, the former carious, and the whole a little more spongy than in the healthy bone.

From the preceding preparation, No. 179.

1. 191. Hip-joint, the surfaces of which are throughout carious, and the greater part of the bottom of the acetabulum deficient. On the outer surface of the ilium and ischium, near to the socket, is a scanty deposit of adventitious bone.

From William Bentley, 9th Regiment, who was reported to have been attacked at sea with acute rheumatism, succeeded by affections of the hip and knee-joint, and pulmonary disease.

42. Knee-joint, the articular surfaces of which are throughout carious.

Removed by amputation, from John Close, 95th regiment. On examining the posterior part of the joint, the popliteal artery was found to pass through one of the sinuses, uninjured.

C. *Caries, complicated with partial Necrosis of the articular surfaces.*

14. Hip-joint, the head of the femur partly destroyed by caries; and a portion of necrosed bone, about an inch and a half long and three quarters broad, presents at the bottom of the acetabulum. The dead part is nearly detached, and its articular surface is smooth. On the external surface of the bone, poste-

rior to the acetabulum, and on the ilium, there is an incrustation of new bone; and, directly above the ischiatic notch, there is a circumscribed deficiency of the adventitious bone, apparently from ulceration, which has extended into the outer table of the old bone.

The patient died of *phthisis pulmonalis*.

41. Knee-joint, exhibiting caries of the whole extent of the articular surfaces, with thickening of the synovial membrane and neighbouring soft parts. A portion of the articular extremity of the tibia is dead and nearly detached, and some necrosed fragments appear to have separated from the posterior part of one of the condyles of the femur.

From John Healy, a phthisical subject. In the neighbourhood of the knee abscesses formed. He died twelve months after the commencement of the disease.

23. Knee-joint, presenting numerous excavations in the articular extremities. Small parts of the surfaces between the inner condyle of the femur and the tibia have assumed an ivory-like polish.

The excavations are probably the result of exfoliations of dead portions of the epiphysis.

The disease is reported to have been the effect of scrofula.

8. Knee-joint, presenting extensive caries of the articular surfaces. On the external lunar depression of the tibia, a portion of the bone is dead, and nearly detached. There is some deposition of new bone on the outer part of the femur and tibia, and the fibula is anchylosed to the latter.

John Dunn, 53d Regiment, aged 40, admitted with the disease on his arrival from India. The limb was amputated, four months after which he died of disease of the lungs and intestines.

5. Shoulder-joint, exhibiting caries of articular surfaces, exposing the cancelli. In the head of the humerus is a cavity containing a portion of the articular extremity of the bone, dead and nearly detached. The scapula is throughout thickened, and its inferior border, and the posterior part of the glenoid cavity, present numerous spiculæ of new bone. On the upper part of the shaft of the humerus is also some adventitious bony matter; and, in one situation, an ulcer with a margin of new bone is seen.

Michael Butt, 8th Hussars, admitted with many large ulcers in the shoulder and side, communicating with the bones and joint of the former. He ascribed the disease to a fall from his horse.

37. Shoulder-joint, exhibiting caries extending deeply into the articular surface of the bones. Some irregular exostoses

present around the glenoid cavity of the scapula, the bone is throughout thickened by an incrustation, on both its surfaces, of new osseous matter; and the tubercles and upper part of the shaft of the humerus are enlarged in a similar manner. In the inferior and posterior part of the glenoid cavity, there is an excavation of large size, and smaller depressions appear on the head of the humerus.

Thomas Ainsworth, 7th Fusileers, aged 25, had ulceration of this joint, of fifteen months duration. After suffering two months more, and being worn out from diarrhœa and profuse discharge from the joint, he died.

On dissection, necrosed portions of bone, which had separated from the excavations described above, were found loose in the cavity of the joint.

D. Caries of the articular extremities, attended with a remarkable disease of the external surface of the bones.

10. Hip-joint, exhibiting caries of the articular surfaces, and of the trochanters. A great part of the head of the bone is consumed, and the acetabulum is enlarged. There is extensive deposition of adventitious bone around the acetabulum, and on the external surface of the ilium; and directly above the great ischiatic notch is a circumscribed deficiency of the new bone, apparently from ulceration.

John Ferroll, 11th Light Dragoons, admitted with pain in the hip of eleven months duration. Suppuration took place within the joint, and he died.

15. Elbow-joint, exhibiting caries of the articular surfaces. There are exostoses on the olecranon, and also new osseous matter on the periosteal part of the bones around the articulation.

The effect of injury received sixteen months previously. The patient was a highly scrofulous subject. The limb was amputated.

17. Elbow-joint, exhibiting caries of the articular surfaces, and irregular deposition of new osseous matter on the external surface of the bones around the articulation.

35 and 38. Elbow-joints, exhibiting caries of the articular surfaces. Numerous spiculæ of new bone are shooting from the coracoid processes, and from the olecranons. Adventitious osseous matter is also deposited on the condyles of the arm bones, from which it extends upwards on their shafts.

Henry Neadon, 67th Regiment, aged 24, an emaciated and unhealthy subject, in whom both these joints were alike affected. There was considerable suppuration externally. The left arm was removed; but he died, after lingering a considerable time, with the stump nearly healed.

D. 1. 189. Elbow-joint, in which there is incipient caries of the ulna and humerus. The greater part of the external condyle is deficient, and around this deficiency, particularly at the upper margin, a considerable quantity of new osseous matter is deposited.

The deficiency above noted is probably the effect of exfoliation.

E. Caries of the articular extremities, attended with a remarkable disease of the cancellous structure,—the bones softened, and their earthy part diminished.

16. Knee-joint, in which the epiphyses are very light, and softer than natural. Ulceration of the cartilages appears to have commenced in several points.

From a lad 12 years of age. An example of the early stage of the scrofulous disease which commences in the cancelli.

33 and 49. Ankle-joint, the bones of which are softened, and their articular surfaces carious.

The diminution of earthy matter is shown from the analysis of a portion of the tibia by Dr Davy, who found its composition as follows, viz.

Phosphate of lime, &c. -	38.2
Animal matter, - -	61.8
	100.0

George Shellings, 47th Regiment, aged 17, a lad of delicate appearance and scrofulous habit, had been upwards of two years affected with the disease. There were sinuses communicating with the joint, accompanied by profuse discharge, and latterly hectic fever. The limb was removed, and twenty days after the operation, when the stump had nearly healed, he died of inflammation of the membranes of the brain.

28. Portion of foot, exhibiting softening of the articular extremities of the tarso-metatarsal bones, the cancelli exposed by the ulcerative process, and some fragments dead and in progress of separation. The articulations of the *os calcis* and *astragalus* to the cuboid and navicular bones are perfectly healthy.

Joseph Reed, aged 31, Rifle Brigade, had long had ulcers on the back of the foot, in consequence of external injury. The ulceration extended, sinuses formed in every direction, communicating with the diseased bones. The limb was amputated, and the man did well.

29. Ankle-joint, exhibiting ulceration extending into the cancelli. The bones are very light, and so soft as to admit easily of being cut with a knife.

From a middle aged man, who had laboured under the disease some years.

The diminution of the earthy matter is shown from the following analysis by Dr Davy of a portion of the tibia, which was found to be composed as follows, viz.

Phospate of lime, &c. - -	39.6
Animal matter, - -	60.4
	100.0

F. *Anchylosis.*

53. Section of a knee-joint, the bones of which are completely anchylosed, the capsule obliterated, and dense cellular tissue occupying the interspaces of the articular surfaces.

From E. Marr, whose case is related by Mr Gulliver in the 130th Number of the Edin. Med. and Surg. Journal.

54. Counterpart to the preceding, in which the soft parts have been removed, showing the cancelli of the femur and tibia, and of the former and the patella, completely continuous.

25. Knee-joint, in which there is anchylosis of the patella and tibia to the thigh-bone, and of the fibula to the tibia. A longitudinal section has been made, showing the complete continuity between the cancelli of the tibia and femur.

A church-yard specimen.

22. Hip-joint, in which there is anchylosis between the upper part of the acetabulum, and the remaining part of the head of the femur. The lower half of the acetabulum is empty, and a large deficiency in its bottom communicates with the cavity of the pelvis. The *os innominatum* and the thigh-bone are much wasted.

From a tailor, who, having laboured under the disease many years, ultimately hectic.

SECTION IV. *Affections seated principally in the tissues outside the joints.*

11. Hand, deformed by large nodosities of gouty tophus around the joints of the fingers, on the palmar aspect of their extremities, and on the back of the metacarpus. The cartilages of the carpus are incrustated with a very thin layer of the concretion, but they present their usual thickness.

11. *a.* Section of a thumb, exhibiting the seat of the gouty matter principally in the cellular substance external to the periosteum and to the articulations, and particularly at the extremity of the member. The masses of the adventitious deposit have no communication with the articular cavities. The cartilages of the latter are of the natural thickness, except in a part of the joint between the metacarpal bone and first phalanx.

From the preceding hand.

11. *b.* Counterpart to the preceding, exhibiting a bursa be-

tween a mass of the adventitious deposit and the external part of the articular capsule.

11. *c*. Piece of a flexor tendon of one of the fingers, with some of the muscular fibres attached to it. In the substance of both some deposits of gouty matter are presented.

From the same subject as the three preceding preparations.

These concretions have been examined by Dr Davy, who found their composition in the dry state as follows:—

Super-lithate soda, - - -	94.5
Phosphate and carbonate lime, -	4.5
Animal matter, chiefly cellular tissue,	1.0
	100.0

From an officer of the 35th Regiment, aged 45, of temperate habits, who had undergone much active service. He was, some years before his death, much affected with gout. Many of the concretions were removed from his hands, and he could write on the table with his fingers. Ulcers also formed on his feet, which usually discharged an ounce of the gouty matter in a fluid state in the twenty-four hours.

V. *Injuries.*

4. 52. Elbow-joint, exhibiting dislocation of the radius and ulna backwards behind the condyles of the humerus. The coracoid process is lodged in the *fossa olecranalis.* The *brachialis anticus* muscle is partly lacerated, and the biceps is much stretched.

Case described by Mr Gulliver in the Medical Gazette, Vol. iii. p. 733.

71. Hip-joint, in which there is a fracture of the posterior part of the rim of the acetabulum, and displacement of the head of the femur on the dorsum of the ilium. The round ligament is ruptured near to its attachment to the pit in the thigh-bone.

A robust young man fell from the castle wall of Edinburgh into Princes Street gardens, from the effects of which it is probable that he instantly died. On dissection, the psoas and iliacus muscles were found on the stretch, the quadratus was entire, the superior fibres of the *obturator externus*, and the posterior part of the *glutæus minimus* lacerated; the superior gemellus completely, and the pyriformis partially torn through, these muscles being carried upwards by the head of the bone; the *obturator internus* was entirely rent asunder; the *gemellus inferior* was perfect. The limb was shortened, semiflexed, and inverted.

Fort Pitt, 2d February 1837.

ART. VIII.—*Cases in Medical and Surgical Practice.* By JOHN REID, Surgeon, Markinch.

1. *Case of Fracture of the Skull with depression from the stroke of a cock—Death.*

March 30th 1834.—Dees, aged 2 years, was struck to the ground two weeks ago by a blow, either from the bill or spur of a game-cock, which produced a wound of the scalp, half an inch in length, about the middle of left parietal bone. Shortly after the accident the child vomited freely. A surgeon who was called ordered basilicon ointment to be applied to the wound, but otherwise made no particular examination.

The child run about as usual, and complained very little for eight days; during which time, however, a slight rash came out on various parts of the body, but soon disappeared without the aid of medicine, and without leaving any bad symptom. On the 9th day he became feverish, and had frequent attacks of vomiting; which continued till the 13th, the day on which I was requested to visit him.

I found the child upon the mother's knee, with the face pale and expressive of great languor; the breathing laborious and stertorous; the pulse 80, labouring but steady. When the eyelids were raised the pupils seemed very much contracted, but on exposure to the light they dilated almost to their circumference. The stools were rather loose and of a greenish colour; the temperature of the body rather higher than natural; no rigidity of any part.

From these symptoms I suspected some affection of the brain. After putting some questions to the parents, they for the first time informed me of the accident; and stated that the child at the time of the accident had just left its mother for an instant, and was found lying upon its face among some coals, and the cock strutting beside it. Upon examining the wound I found it in a state of suppuration, covered by a poultice, which was ordered on the morning of the 13th, and at which visit the surgeon for the first time had probed the wound. Upon probing the wound I discovered that a portion of the scull had been beat in. The depressed portion seemed to lie inclined from before backwards, because when the probe was introduced in that direction, it glided along the inclined surface of the fragment till it came in contact with the rough edge of the sound portion of the cranium, where it stopped, but under which it could be insinuated with very little effort.

The gentleman who attended the case from the commencement doubted the existence of a fracture, on the supposition that it was only an indentation of the outer table of the skull from the bill of the animal. But after some discussion we agreed to enlarge the wound and dissect back the scalp. A T incision having been made, the flaps were dissected so as to expose the injured part. About three-eighths of an inch square of the bone was seen to be considerably depressed in the direction, as stated above, and comminuted. We endeavoured to insinuate the elevator under the most depressed edge of the fragment, but could not accomplish this, till we had snipt off a small piece of the sound portion of the cranium; after which we got the elevator under it with the greatest ease, raised the depressed portion, and removed it entirely, as it was very much comminuted, and seemed quite detached. The *dura mater* seemed quite healthy, presenting a translucent surface of a bluish tint, without the slightest appearance of inflammation. Nor was there any discharge from the opening. The integuments were brought together and retained by strips of adhesive plaster; simple dressing was applied, and the whole was secured by a bandage.

The child seemed a little relieved after the operation. The pulse was the same as to frequency, but freer and less oppressed. The iris was more active, but still dilated when exposed to the light. A little calomel and rhubarb was administered to act on the bowels; the child was laid in bed, and ordered to be kept very quiet. He continued much in the same state till ten o'clock P. M. when he died,—seven hours after the operation. No *post mortem* examination was allowed.

Remarks.—The above case is certainly worthy of being recorded, although it had nothing more to recommend it than its uncommon occurrence, there being on record, so far as I know, only one case of the kind, which is given by Sir Astley Cooper in his Lectures on Surgery. The motions of the iris in this case are not at all explicable from what we learn from physiologists regarding the function of this organ; and, being quite the reverse of what usually occurs under fracture of the skull with depression, the circumstance deserves the attention of all those who have set themselves to the study of its functions. For my own part I cannot offer an opinion; but I think it ought to have some influence in making us suspect, that the perception of objects and light are not the only causes of the motions of this membrane; for in this case, when the child was lying with its eyes completely closed, the pupil was narrowed to a very small compass; but the moment the eyelids were opened, it was dilated far beyond the normal state. Could the opening of the eyelids produce it from *sympathetic* communication with *some* of the nerves of the iris—the influence of the motor nerves of its normal functions having been suspended from the irritation kept up by the depressed portion of bone, or from some disease induced in consequence? It is much to be regretted that the state of the brain in this case was not ascertained. All the other symptoms, however, were the usual accompaniments of such a fracture.

2. *Case of Incipient disease of the Spine cured by caustic issues and Vinum Colchici.*

February 28, 1834.—Ann Donaldson, house-servant, aged 25, complains of general weakness over the whole body, particularly in the lower extremities, and dorsal region of the spine. When sitting, she is obliged to support the upper part of her body by resting the elbows upon the knees, and when she attempts to walk trails her feet along the floor, with her body bent forward. The appetite is much impaired, the bowels costive, tongue clean, pulse 96, sharp and regular, catamenia rather slow. The complaint, she says, commenced six months ago, after riding some miles in a cart, which, she thinks, hurt her back.

Upon examination, the spinous process of one of the dorsal *vertebræ* is found projecting considerably, and the soft parts on both sides of it very much swelled, a little red, and very painful on pressure, but without sense of fluctuation. She has no pain in any other part of the spine, and tapping upon the projecting spinous process does not give so much pain as on the surrounding soft parts.

To improve the digestive organs, she was ordered to take five grains of the mercurial pill every second night, and the following morning two ounces of infusion of quassia, with one ounce of Epsom salts. A caustic issue, about the size of a half crown, was formed on both sides of the projecting spine. After the eschars separated, she got one drachm of the meadow-saffron wine every forenoon in a little water. The pills and bitter infusion were continued about three weeks, when the digestive organs were very much improved. To keep up a slight discharge and irritation, the bottom of the ulcers were touched occasionally with the caustic potash, and a poultice was kept constantly applied.

This treatment with little variation was persevered in for three months; at the end of which period she could walk pretty steadily through the house, had the complete command of her limbs, and a good appetite, but complained still of weakness in the small of her back. When the ulcers were completely healed, the swelling and tenderness which existed on each side of the projecting spine, were entirely gone; but there was no apparent difference in the size of the projection. She went to sea-bathing quarters for about three weeks, but, in consequence of fatiguing herself by too much exertion, returned complaining again of weakness in the back, and of slight pain where the issues were formed. For this a small blister was applied over the painful part, and immediately healed; the bitter mixture was again administered, and the recumbent position on a firm mattress strictly enjoined. This treatment was persevered in till the end of July, at which time she felt so well that she was able to work in an ordinary way about the house. I saw her on the 27th September following; she looked well in every respect, being plump and florid, and said she had no complaint.

Remarks.—I think there cannot be any doubt as to this case having been one of incipient disease of the spine. The projection of the *vertebra* and the swelling on each side were direct marks of the local ailment, and the general weakness of the lower extremities and back was very characteristic of the affection. Of the treatment little need be said—the good effects having been so very apparent. Issues managed in the above way are certainly powerful remedial agents in such cases, but they should always be resorted to early.

3. *Case of Scarlatina Anginosa with complete suspension of voice, which terminated fatally under very obscure symptoms.*

May 31, 1834.—Isabel Braid, aged 6 years. Three days ago a faint rash appeared on different parts of the body, accompanied with slight febrile symptoms. Two days following the first appearance of the rash, she was suddenly seized with pain in the throat, upon which she obstinately refused to make any attempt to swallow. She frequently put her hands on the painful part, only spoke once after her throat became affected, gazing on those around with an anxious but vacant stare. Upon examination the posterior wall of pharynx appeared slightly inflamed, the redness was most intense downward, being gradually softened off as it approached the palate, but there was no apparent tumefaction neither of the mucous membrane nor of the tonsils. The pupils though rather dilated, contracted feebly to the light; but she seemed quite conscious of all that was going on around. Pressure over the epigastric region elicited no symptom of pain; the breathing was free and unaccompanied with wheezing; the tongue was clean; the pulse 100, small, but steady; the bowels said not to be costive. Five grains of calomel were ordered to be given, and eight leeches to be applied to the throat, to be followed with warm fomentations and a large poultice.

After the operation of the medicine and the bleeding she seemed a little relieved, and attempted to swallow some drink, but got little or none of it over, seemingly from inability to use the muscles of the pharynx. During the succeeding part of the night she was pretty quiet, and seemed upon the whole a good deal relieved, but about five in the morning became very restless, frequently, as before, putting her hands to her throat, and tossing as if from a sense of suffocation. Being sent for I again examined the *fauces*, but, with the exception of the inflammatory blush having extended a little higher, I could perceive no other ostensible change. The throat was immediately surrounded with a blister, and the posterior wall of the fauces touched with a two-grain solution of the nitrate of silver. Without any very evident change taking place, she died at twelve o'clock noon, being six hours after the blister was applied, and only eighteen hours after I first saw her. She seemed quite sensible to the last, but never attempted to speak during the time I attended her.

Remarks.—The above case is something remarkable from the voice having been suspended almost from the very commencement of the disease of the throat. There cannot be the slightest doubt that the inflammation commenced first about the lower part of the *pharynx*, and had extended rapidly to the upper part of the *larynx*, thus affecting its muscles, cartilages, &c. in such a way as completely suppressed its vocal actions. It appears as if the inflammation had been completely concentrated about the lower part of the pharynx, from the great aversion the patient had to attempt to swallow; for it is when the morsel reaches the middle or lower part that the greatest exertion is required in the acts of deglutition. Such cases are very deceitful and insidious; for upon inspecting the *fauces*, little can be seen, and consequently one is very apt to give a wrong opinion as to the result of the case. It is to be regretted much that the parents would not listen to examination of the body.

4. *Case of Scarlatina Anginosa, with extensive phlegmonous inflammation about the large joints.*

Nov. 1st 1834. Peter Davidson, aged 5, a stout fine-looking boy, three days ago, was seized with sore throat, external parts about the angle of the jaw being swelled, accompanied with difficult deglutition. A slight rash came out upon different parts of the body the day following, after which he was somewhat relieved. He got worse on the third day, complaining very much of his head and throat; and at times seemed a little delirious. Upon examination the mucous membrane both of the anterior and posterior fauces was found to be considerably injected, exhibiting a vivid redness throughout; but there was little swelling either of the membrane itself or of the tonsils. The throat externally on the right side was considerably swelled, very red, and painful on pressure. The left side, though a little swelled, exhibited no symptoms of active inflammation. The rash was pretty regularly diffused over the most of the body. The skin was hot; the pulse 120; the tongue red, but tolerably moist, and not covered with any fur. The bowels had been opened with infusion of senna. Ten leeches were ordered to be applied to the right side of the throat; and the bleeding to be promoted by a large poultice renewed every half hour. To act on the bowels a powder, consisting of five grains of calomel and one of ipecacuan, was given. After the bleeding and operation of the medicine the constitutional symptoms were somewhat relieved, and the tumour was less tense and painful on pressure, though still very red. The tepid bath at bed-time was ordered, and the poultice to the throat to be continued during the night. Morning of the 2d, passed rather a restless night; screaming much through his sleep, and always awoke in a fright. The eyes were clear and glossy; the pupils somewhat contracted, and impatient of light; the pulse the same as the preceding day; the skin dry; the tongue clean and moist; and little thirst. The head was ordered to be shaved, and cold lotions applied; poultice continued to throat, and a table spoonful of a mixture consisting of two ounces of *Aqua Acetatis Ammon.* a drachm and a half of antimonial wine, and a drachm of syrup in three ounces of water.

In the evening he was rather easier, the mixture having produced a gentle diaphoresis, and the cerebral excitement was much lessened. The same treatment was directed to be continued during the night, and to have a dose of infusion of senna.

3d. Again passed a restless night, complaining much of the right hand, which is very red, swelled, and painful on pressure on the dorsal aspect, and around the wrist-joint. Six leeches were applied, bleeding kept up for an hour, with a warm poultice, then an evaporating lotion. As there was a feeling of fluctuation in the tumour on the throat, the poultice was continued; but as the cerebral excitement was entirely gone, the cold lotion to the head was given up. In the evening he was very feverish; complained much of his hand, which was still very tense and painful; had little complaint of throat. The pulse was very quick and small; the tongue still clean; and the bowels had been moved. The saline draught was ordered to be continued during the night, and the hand to be enveloped in a large poultice.

4th. Throat and hand much the same; fever less intense; passed rather a better night; poultices to be continued. To have a little infusion of senna. Evening, senna operated; since which has been rather easier; fluctuation quite distinct in the neck; hand seems approaching to suppuration too. I wished to puncture the tumour of the neck; but the parents would not consent. Poultices to be continued.

Morning 5th. Slept some the first part of the night; but became restless toward the morning; does not complain of neck or hand, but of right elbow-joint, which now seems affected the same as the wrist. As he was now getting weaker, and as the cold lotion to the hand gave little relief, a poultice was ordered to the elbow. In the evening, he was a little relieved, as the swelling in the back gave way, discharging about two ounces of brownish-looking pus.

6th. Elbow very painful, and complains of pain in the left knee, which is a little inflamed. The poultices to be continued as formerly, and a cold lotion to be applied to the knee.

7th. Feverish; pulse being 120, small; complains much of elbow and knee; fluctuation can be felt in back of hand, which is tense and painful to touch. In the evening the hand was punctured, and a considerable quantity of healthy-looking matter discharged.

8th. The rash, which had continued till now pretty vivid on different parts of the body, almost disappeared; pulse still 120, small; knee and elbow painful, and considerably swelled; discharge from neck and hand rather unhealthy. Applications to be continued, and to have nourishing soups and beef-tea.

9th. Opening in the neck in a sloughy state, discharging a brown sanies; complains now of ankle-joint on the same limb as knee, which is swelled, red, and painful. Elbow appears to be approaching to suppuration. Two drachms of a solution of carbonate of ammonia were ordered to be given every two hours. The turpentine liniment to be applied to the neck; poultices continued to the elbow and hand; cold lotions to the knee and ankle. From the 9th to the 14th, the day on which he died, he got daily weaker; the pulse being very quick and small, with great constitutional excitement in consequence of so many local inflammations. No wine was allowed but the mixture of carbonate of ammonia, and the nourishing soups were continued as long as he could take them. He continued sensible to the last, and died seemingly through sheer exhaustion.

Remarks.—This case is certainly very remarkable from so many of the large joints becoming in succession the seat of inflammation so violent. It appears that in this case there was little or no determination to the thoracic *viscera*, as is generally the case in eruptive fevers. There were symptoms of slight determination to the brain, but these were soon got under by the means above-mentioned. The cellular membrane about the throat and joints seems to have been the chief seat for the retrocession of the fever at the going in of the eruption. Great relaxation of the whole system, but especially of the cellular membrane, generally follows scarlatina; hence the reason of the limbs and other parts being often œdematous after this complaint. But I never either saw or read of a case where there was such a disposition to phlegmonous inflammation. The irritation from so many acutely inflamed parts must have been immense; and it is not to be wondered that the little patient was in a manner fretted out of his existence. If the occurrence of so many local inflammations could have been foreseen, a general bleeding and the tartar emetic solution might have been of the utmost advantage in, at least, checking their course; but just when I was about to adopt a rigorous antiphlogistic treatment, the external fauces became gangrenous, consequently no alternative but the soothing plan could be had recourse to.

5. *Attentata castratio sui.*

William S.——, aged 17, shoemaker, I found on the 2d October, 1 P. M. 1835, lying on his back across a bed in his father's house, pale, and different parts of his body covered with blood. A quantity of linen wrapt round his loins was completely soaked in blood; the floor was covered to a certain extent with partly coagulated blood; and the part of the bed on which he lay was completely drenched. The pulse was scarcely perceptible; the speech gone; and, from all appearance, he was fast sinking. When the linen around the loins was turned up, blood, apparently arterial, flowed in considerable quantity. After all this bloody linen was removed, a mass of coagulated blood was seen to envelope the whole of the external organs of generation. On carefully removing this, the right testicle was found hanging out from a wound made in anterior and superior aspect of scrotum, and exactly in a line with the chord, about 1¾ inches in length. The incision was clean, and appeared to have been made by a sharp cutting instrument. The *tunica vaginalis testis* was cut to the extent of ½ inch; the chord seemed sound; but the posterior aspect of testicle at the lower part appeared to have suffered slight laceration.

After the parts were completely cleaned, the testicle was returned into the scrotum; and as there was very little hemorrhage the edges of the wound were brought together with three sutures and adhesive plaster, simple dressings, and a T bandage were then applied. During these operations a little wine with water was administered occasionally, to bring about a reaction of the system. ½ past 3 P. M. pulse more perceptible; but the feet were cold. Warm bottles were applied to the feet; wine to be continued. ½ past 6 P. M. pulse 90; very much improved; skin pretty warm; not much inclined to speak, but gave an account of the accident, and said that it was done in a plantation by three tinkers. At 8 P. M. the pulse was much about the same; did not complain much of wound; stimulants to be given cautiously; and a cold lotion to be applied to injured parts if they should get painful during the night.

After this no untoward constitutional symptom occurred; and when the dressings were removed on the fourth day, the wound was found in a healthy granulating state. On the seventh day very profuse hemorrhage took place from a small artery of the scrotum; the open mouth of which could not be seen, being completely obscured by the granulations of parts. The bleeding was stopped by the application of lint. But in the course of four or five days it broke out again, and bled most profusely. At this time it was discovered that the open mouth of the artery and the small granulating cavity which it opened into, had been covered over with a thin film of organised lymph, which had become gradually distended by the pressure of the blood, thus forming a false aneurism about the size of a filbert, which had given way on the occurrence of the hæmorrhage. This small sac was completely laid open, but as the vessel could not be laid hold off, the *Potassa fusa* freely applied, completely checked any further hemorrhage. The healing process went on then rapidly, and the parts were completely sound in about three weeks after the accident.

Although Swan stated that he had been laid down in a plantation and cut by three tinkers, he afterwards confessed to the sheriff that he committed the deed himself. He said that his reason for doing it was that, for some time past, he had had such frequent and copious seminal emissions that his master had quarrelled with him about the soiling of the sheets; so to do away with this cause of disagreement between him and his master he had committed the rash act. He said that it was the great bleeding which prevented him from completing the operation. It was afterwards discovered that he had attempted to arrest the hemorrhage by wrapping his stockings round the parts; but finding that inefficient, he went to a gardener, about quarter of a mile off, whom he requested to stop the bleeding and complete the operation. In compliance with the first part of the request the gardener wrapt the linen round him; but we suppose begged to be excused from performing the latter; but walked him home—a distance of about half a mile. The knife (a sharp-pointed shoemaker's one) and his stockings were afterwards found in the plantation by the authorities.

Remarks.—As this case might have been interesting in a medico-legal point of view, it may not be amiss to make some remarks upon the subject of it, and the tendency it might have in misleading a jury, had tinkers been committed and tried upon circumstantial evidence. There cannot be the slightest doubt that the statement of the young man would have been much confided in by a jury, if his evidence were at all consistent with the *known* circumstances of the case, and if made under the slightest suspicion had been apprehended for the offence. Now it appears that S—— after committing such a foolish act, was most anxious to screen himself by alleging that it had been done by tinkers. And it appears, too, that this device was rather artful, for there had actually been a band of tinkers about the village that same day, which circumstance shows that he had reasoned himself into the belief that such a coincidence would, in all probability, make his statement appear doubtless. Had he persisted in his first statement, and had any of these tinkers been apprehended, and identified as those that were seen in the village that day, to a certainty they would have been held culpable, and in all probability would have been convicted of a capital crime. This view of the case is rendered the more probable from rather a singular circumstance about to be related. When the writer was riding through the village on the way to his patient, there was a tinker, sitting by the side of a wall not very far away from the patient's home, who called out aloud that the young man had cut himself going over a paling. Now this saying from an individual concerned with the suspected party would have implied, at least, some knowledge of the case, even before many in the village were actually aware of its occurrence; and such a saying appeared very like one coming from a guilty person, in order to avert suspicion from falling on him or his party. These remarks are only given with the view of rendering the case more distinct, and to shew that, even under the most impartial investigation of a case, circumstances, apparently much to be depended upon, might lead to the most painful consequences, in drawing out a very wrong verdict from a jury.

S—— appears to be a person of weak mind, of the melancholic-nervous temperament, and partakes of the character of the family in being inactive and very inoffensive. Much might be said upon the state of his mind in committing such a deed, but for the present the writer will leave that to the curious inquirer. It may be mentioned that S——was rather fond of music, and it was alleged that it was to improve his voice that he had committed the deed. This reason, however, appears rather scientific, for a lad in his rank, to be much depended upon.

6. *Case of Wound of the left Carotid Artery from a fish-bone sticking in the œsophagus—death.*

George B———l, aged 27, tailor, a healthy fine-looking young man, when in a neighbour's house on Monday evening, the 18th instant, about twelve o'clock, was eating some fish. After swallowing a morsel, he stretched himself back on his chair, and exclaimed that a bone had stuck in his throat. He made some attempts to get it down by swallowing rough bread, but did not succeed, the same sensation still continuing. On the 19th he was out of bed till twelve mid-day—took a dose of Epsom salts and cream of tartar; but as symptoms were becoming worse a surgeon was sent for, and saw him at seven in the evening. From the existing symptoms the medical attendant did not think that there was "any bone in the case," and attributed the pain and irritation which then existed about the throat to inflammation of those parts, brought on by a fit of intemperance. At this time there was much pain and some tumefaction of throat, and the patient could not swallow his spittle, which flowed from the angle of his mouth into a cup as he lay on his side. For those symptoms he was ordered "a powder," and to have the throat surrounded with a hot poultice.

On the 20th, 11 A. M. He has complained very much of the pain in the throat. He was bled from the arm to the extent of a soup-plateful, and had a sinapism applied round the throat. At 10 P. M. he was bled again to the same extent, after which the pain in breast and throat was much relieved, but he complained of a sense of suffocation. On the 21st (Thursday morning,) the pain in the throat and breast was much worse, and he complained also of pain "in the stomach." A blister was directed to be applied over sternum. 7 P. M. Blister taken off, felt easier, but complained of pain extending round to his right shoulder. On the 22d (Friday forenoon,) he complained very much of throat and breast, was unable to lie on right side, and with great difficulty on left. In the afternoon a sinapism was applied over the sternum, but gave little relief. 12 P. M. much worse from pain in breast; right side of throat very much swollen, with considerable tumefaction over whole of cervical region, but without any inflammatory blush. Was bled again to the extent of a soup-plateful. 23d (Saturday,) complained much more of throat than he did yesterday, but had little complaint of breast. The pain of throat was so much relieved by bleeding from the application of leeches, that he declared himself quite well. On Sunday, 24th, he continued easier—took a few Epsom salts. On the 25th (Monday,) he sat up while his bed was made; felt considerable pain in breast when coughing; but had no complaint of throat. 26th (Tuesday,) sat up an hour, and only complained of slight pain in breast. 27th (Wednesday,) Put on his clothes, and sat up two hours; was hoarse, and complained a little of throat and breast.

On the 28th (Thursday,) got up at ten o'clock morning, and sat up five hours. At ¼ past 3 P. M. he became sick, and immediately vomited fully a chopin of very florid blood, not in the least coagulated. Cold water and the mineral acids were administered. On 29th (Friday morning,) had no complaint but weakness till 11 A. M. when he again became sick and vomited two or three mouthfuls of florid blood just similar to that of yesterday. An injection brought away a great quantity of dark coagulated blood. In the afternoon he was more free from sickness; and was a little revived from getting some brandy and wine in water. 30th (Saturday morning five o'clock,) awoke from his sleep very sick, and just when about to get a cupful of tea, gave a groan, said he was dying, and immediately expired without any external symptom of hemorrhage.*

Having had occasion to visit this young man's mother on the Friday afternoon previous to his death, I was requested to see himself. I found him very dull and much blanched. He said he felt quite easy but very weak; the pulse was then 80, soft and regular; the tongue was clean, but remarkably pale; was taking the aromatic sulphuric acid, and the tincture of muriate of iron every hour.

Previous to this time the parents were very anxious that the attending surgeon and I should have a consultation, but, from certain circumstances, that did not take place. However, matters were so reconciled, that we were to meet next day at ten o'clock; but about five in the morning, when he became worse, both Mr ——— and I were summoned; but before I reached the house he was gone. From the appearance of the body and the sudden death, with all the foregoing circumstances of the case, Mr B——— and I were of opinion that death had been caused by internal hemorrhage,—an opinion, the correctness of which may be estimated by the following account of the appearances discovered after death.

Six hours after death the examination was commenced by exposing the contents of the thorax and abdomen. All the *viscera* of both cavities seemed healthy, but quite bloodless. The liver and heart were very pale, and the cavities of the latter organ scarcely contained a drop of blood. There was about an ounce of fluid in the pericardium, and a trifling exudation into the pleural sacs. The lungs contained about the usual quantity of venous blood.

The intestines were completely distended by a dark-coloured fluid, having all the appearances of blood through their coats. After tying the pyloric extremity of the stomach, we slit it open on its anterior aspect, and found it filled completely with fluid and coagulated blood. Of the former about three pints were emptied in a cup, and of the latter there was a large coagulum of about three lbs. weight, which extended upwards into the œsophagus, and completely filled it for a considerable space. As the course of the hemorrhage was now evident, the *œsophagus* was laid bare throughout its whole length. To facilitate the dissection of this tube, the aorta was cut across close to the heart, which was removed, and the *arteria innominata* was also cut across just where it divides into the carotid and subclavian arteries. After having examined the internal coat of the stomach minutely, and being satisfied that the hemorrhage had not proceeded from it, we slit up the *œsophagus* in successive portions, sponging its inner surface carefully as we went along, but found no lesion whatever until we came to its inferior cervical portion. There the whole mystery of the case was unravelled.

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* The above reports may not be so full nor correct as might be wished, as they were only given by his sister from memory.

Just about an inch above the sterno-clavicular articulation there were two slightly ulcerated openings in each side of the tube. The one on the left side was about three lines in diameter, almost round, and situated on the anterior lateral aspect; the one on the right was about the same size, but of a more irregular shape, and situated on the posterior lateral aspect, exactly opposite the former. The edges of the left opening were a little ragged, and seemed more ulcerated than those of the right, which had more the appearance of a recent wound. A probe could be introduced into each opening to the extent of three-eighths of an inch. The left carotid was now detached carefully from its connections with all the surrounding parts, except the *œsophagus*, to which it was adhering very firmly, and from which we did not intend to separate it until the source of the hemorrhage might be ascertained. A probe being introduced into the left wound in the *œsophagus*, the left carotid was slit up cautiously from below upwards, and there was presented a longitudinal opening into the artery a quarter of an inch in length, with the probe sticking through it, corresponding exactly to the aperture in the *œsophagus*. The corresponding parts of the *œsophagus* and artery around the opening were adhering so firmly that they could not be separated but by the knife. The right carotid was quite safe, the wound in that side of the *œsophagus* having terminated in the contiguous cellular substance. The fish bone was not discovered, having, in all probability, slipped down about the time the urgent symptoms subsided.

Remarks.—That the bone was the cause of all the mischief in the above case there cannot be the slightest doubt; for previous to the morsel of fish being swallowed, the young man had not the slightest complaint whatever. And it is not at all probable that those lesions in the *œsophagus* and artery could be the consequence of idiopathic ulceration, as all the surrounding parts were quite healthy. The very circumstance, indeed, of the artery adhering so minutely to the *œsophagus*, and being so effectually opened, shows that its coats must have been torn by the sharpness of the bone; otherwise, as is well known, it would have resisted any contiguous ulceration going on, and, instead of adhering, would have separated from the injured, in consequence of the destruction of the intermediate cellular substance. But the very circumstance of the two lesions in the *œsophagus* being situated so exactly opposite each other, shows that they had been made by something sharp sticking across the tube, and that the fish bone had, without doubt, stuck there by two sharp extremities for a considerable time, sinking deeper and deeper into its fixtures at every attempt to swallow.

It is questionable whether or not the introduction of the probang at the time the surgeon was called would have been of any service, as nearly twenty-four hours had elapsed; a length of time perhaps sufficient to admit of all the injury. However, as the patient always persisted in his first opinion, it is to be regretted that it was not introduced. Its introduction would have, at least, mitigated the painful symptoms, and have prevented painful reflections. That the perforation of the artery must have been *gradual*, is evident from the length of time elapsed before the hemorrhage came on. The intermission between the different hemorrhages must have been occasioned by the opening in the artery having been some way or other plugged up. But, considering the great size of the artery and the extent of the opening, it is very surprising that there should have been so long an intermission as thirty-six hours. This, however, can only be accounted for by supposing that the contraction of the *œsophagus* might cause the formation of a clot, and thus put a stop to the hemorrhage.

7. *Case of Lateral Dislocation of the Heads of the Radius and Ulna, composing the Elbow-Joint, inwards.*

July 2, 1834.—William M'Ewan, game-keeper, a stout young man, having gone six miles from home with some companions, and having been made rather free in drinking spirituous liquors, commenced wrestling, was thrown upon his left elbow whilst it was in a semi-bent position; heard something crack when he came to the ground; and upon getting up felt that he had not the proper use of his arm. On his way home, and about four hours after the accident, he submitted his arm to the examination of a surgeon, who told him that there was no dislocation, and that it only required the application of a few leeches to allay the swelling. Having reached home, and not being satisfied with this advice, he sent for me, being eight hours after the accident.

I found him in bed under considerable constitutional excitement, with the face flushed; the skin hot but perspiring freely; the pulse at 100, strong and throbbing, and complaining much of his arm; he had vomited twice. The soft parts surrounding the elbow were so much swelled that the external conformation of the joint could not be distinguished, and the extremities of the bones could only be felt with great difficulty; pronation and supination could not be performed to any extent without exciting considerable pain, but the joint admitted of complete *flexion* and *extension*. When the arm was completely extended the deviation from the straight line was quite apparent, and the contour of the swelling both on the inside and outside of the arm, showed distinctly that the superior part of the fore-arm was driven inward. When the joint was grasped with the left hand, and the mid-finger pressed over the site of the head of *radius*, no motion of it could be detected upon pronation and supination being performed by twisting pretty powerfully at the wrist; but a slight feeling of crepitation was observable over the internal condyle of the *humerus*, though it was very obscure from the great swelling which surrounded the whole of the parts. When the course of the *ulna* was traced from below upwards, its deviation inwards from the line of the axis of the *humerus* was quite apparent; and the *olecranon* process could be distinctly felt out of its place, as the finger could be thrust into the *olecranon fossa*. From these symptoms, I concluded that it was a dislocation of the elbow-joint inwards, with fracture of a small portion of the internal condyle of the humerus.

In order to reduce it I seized hold of the wrist with the right hand, the upper arm being grasped firmly by an assistant, and whilst making extension pressed strongly with the left hand upon the superior part of the fore-arm, backwards and outwards, in order to free the head of the ulna from the internal condyle. Having applied all my force in this way, with a sudden jerk I twisted the arm inwards, and bending it slightly at the same time, had the satisfaction of hearing the bones slip into their places, and the patient expressed himself as being much relieved. With the exception of the swelling the arm now appeared quite straight, the tip of the *olecranon* could be distinctly felt in its natural position, but from the swelling the rotation of the head of the *radius* could not be distinguished. Being confident that all was right, I placed a firm compress over the internal condyle, and surrounded the whole arm with a roller; laid it upon a pillow in a horizontal line with the body, ordered the bandage to be kept wet with cold water, and two ounces of sulphate of magnesia to be taken immediately.

The following morning he was rather uneasy and feverish, his medicine not having operated; but did not complain particularly of the arm. A dose of salts and senna was prescribed with the continuation of the cold lotion. In the afternoon he was much relieved from the operation of the medicine—" felt his arm not as tight in the bandage, and perspired pretty freely. The cold lotion was continued for about a-week; at the end of which the swelling was considerably subsided, and he was able to go about with the arm supported in a sling. In a month he could dispense with the sling, and use the arm a little; but still kept the compress and roller applied. At this period no crepitation could be felt over the internal condyle; the swelling was so inconsiderable that the head of the different bones could be distinctly felt in their natural position, and the motions of the joint, though limited, were performed without much pain. I saw him six months after the accident at his usual avocation. He said his arm was quite well, and could use it as freely as ever.

Remarks.—I think Sir Astley Cooper says, that in lateral dislocation of the elbow inwards the head of the radius is to be found in the *olecranon fossa.* In this case I could not feel it at all, which was owing, no doubt, to the great swelling of the soft parts. At first sight this case puzzled me not a little; but the obliquity of the fore-arm to the humerus and the joint admitting of extension and flexion soon led to a knowledge of its nature.

ART. IX.—*Remarks on the Norway Hospitals for Radesyge, made during a visit to Norway in the summer of* 1836. By EDWARD CHARLTON, M. D.

HAVING had this last autumn an opportunity of inspecting some of the hospitals in Norway, and of seeing the Norwegian Radesyge or leprosy, in various parts of that country, I gladly, through the medium of this Journal, communicate a few remarks on this disease, as well as on the establishments destined to receive the unfortunate sufferers. I cannot venture to give an original description of the malady, as my stay was too short to allow me to observe it in all its stages. But I may refer to the excellent compilation of Hunefeld to supply that deficiency.*

I first met with the Radesyge in Christiania, the capital of Southern Norway. The old city hospital, the only one which formerly existed in the town, is now destined solely for the reception of patients affected with venereal symptoms, with radesyge, and with every species of skin disease. This arrangement which is justly reprobated by the present medical men of Norway, is evidently pursued according to the old idea, which still seems to prevail in Sweden, that the radesyge is a species of syphilis, or at least a syphiloid disease. † This evil, however, will shortly be remedied by the removal of the patients from this incommodious building, to the new Rigs Hospital, on the north-east side of the town, at the head of the Argerstrasse. This edifice is not yet completed,* two sides only being occupied by the sick. The quadrangle when finished will contain the venereal and midwifery establishments. The excellent regulations already established and enforced, in the clean airy wards of the new hospital, form a striking contrast with the low crowded ill-ventilated rooms of the Filialafdeling, which strongly reminded me of the dismal venereal hospital at Paris.

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* Die Radesyge oder das Scandinavische Syphiloid, &c. Leipzig, 1828.

† The State regulations appoint the Filialafdelingen for the reception of "persons affected with the venereal disease, the radesyge, and *other malignant* affections of the skin, (de a veneriske Syge, eller andre *ondartede* hudsygdomme, angrebene personer.")

The printed state regulations for both the hospitals in Christiania are excellent; but at present it is difficult to put them in practice in the Filialafdeling. This establishment contains about 80 beds. The physician in chief (Overmedicus,) is Prof. Sörensen, who holds the same station in the Rigs Hospital. He receives a salary of 300 species dollars (about L. 60 Sterling) per annum. It is part of the duty of the Overmedicus to visit the Filialafdeling after terminating his labours at the Rigs Hospital, which commence at 9 A. M. The latter duty, however, is frequently deputed to, and indeed the principal part of it is performed by, the assistant physician, Dr Hjort, a zealous and intelligent young man, who appears sincerely devoted to the arduous duties of his situation. The appointment of assistant physician lasts but for three years. His salary is 250 dollars per annum, with free board and lodging. He is obliged to visit the patients under his charge at least twice in the day, and must accompany and assist the Overmedicus at his visit at 11 A. M.

Of a third class are the *candidates*, corresponding in some measure to the Resident Clerks of the Edinburgh Infirmary. These are mostly young men who have already taken their degrees, and are lodged and fed in the hospital with a salary of 68 dollars per month. One of their number is obliged to be constantly in the house, each remaining within doors for twenty-four hours. They are appointed by the physician and surgeon in chief, and are three in number. To them is committed the duty of seeing that the medicines are properly administered to each patient. One of the candidates must retire from his office at the end of every three months.

Volonteurer, the fourth class, are selected by the physicians and surgeons. Their number is not limited. They receive no pay, and do not reside in the hospital. They are the assistants of the *candidates*, and their office is considered as an introduction to the latter post. The rest of the establishment consists of an inspector, an Œkonomus, a minister, night and day nurses, &c. &c.

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* The Rigs Hospital will contain when finished about 350 beds; at present only 150.

The Filialafdeling is little calculated to afford much comfort to the inmates. The house is in the centre of the town; the beds are low and ill-ventilated; the beds are closely crowded together, and a striking air of misery is visible on the faces of the sick. The kindness and attention of Dr Hjort is worthy of the greatest praise, but it seemed to me impossible that eighty patients could be visited and examined in little more than an hour. A double journal is kept in the Latin language of each of the cases.

Having thus cursorily described the Venereal and Radesyge Hospital of Christiania, I shall not stop to speak of the various remarkable examples of the latter disease that were there shown to me, but, reserving this for the conclusion of the remarks, proceed to notice the country hospitals I visited during my journey through Norway. Being alone and on foot, I had ample opportunities of conversing with, and entering the houses of the poorer class of natives, and was everywhere struck with the filthy state of their dwellings, the wretchedness of their fare, and the quantity of skin disease, especially *scabies*, that appeared to prevail. At Kongsberg, a town well known from its vicinity to the silver mines, there is a county hospital, if I may so term it, containing twenty or thirty beds. Numerous cases of radesyge were here to be seen, and also a solitary example of the true Spedalskhed of Bergenstift.

Leaving Kongsberg, I crossed the mountains to Skeen, where a large hospital has been lately erected for the reception of patients affected with radesyge. It is under the care of Dr Hans Munk, who is well known to the medical men of Norway, as the author of an excellent essay on the radesyge. * The hospital of Skeen is beautifully situated on the banks of a river, about an English mile and a half from the town. It is built of wood in the form of the letter H, and contains about a hundred beds, being fitted up, under the superintendence of Munk himself, with baths, and every other convenience for the patients. The total expense of the building was about L.1500 Sterling. At the time that I visited it, August 27th, there were not more than thirty patients within its walls, but in winter, Munk assured me, he had generally double that number. Many also apply who are merely malingerers, or at least affected in a very slight degree with the radesyge, being desirous of exchanging their ill-ventilated solitary dwellings in the mountains for the more comfortable wards in the hospital. This is by far the most cleanly of the radesyge hospitals I visited in Norway. The situation was well chosen, the wards high and well-ventilated, and the whole economy, which was detailed at no small length by Dr Munk, seemed well calculated for the purpose intended.

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* See Svenska Laekare Sallskapets. Handlingar, 1815.

I now revert to the observations I made on the disease itself. It would be presumption indeed in me, after the few cases that I have seen, to attempt to give a full description of this remarkable disease. In the Christiania hospital, the most prevalent affections appeared to be those of the mucous membrane of the nose, mouth, and *fauces*. The ulcerations were large and deep, frequently occupying the whole of the soft palate, and advancing forwards into the mouth. As far as I am aware, the ulcers had no peculiar character, but bore considerable resemblance to the common syphilitic ulcerated sore throats in this country. In several advanced cases, the palate bones and the *ossa nasi* were nearly destroyed, and the articulation of the patient exceedingly indistinct. Dr Hjort showed me one man, in whom no affection was visible, but a small hard copper-coloured tubercle on the bridge of the nose. It was of too marked a character to be mistaken, and he said he had frequently observed these tubercles in the commencement of the radesyge, and had no doubt but that the man would in a short time exhibit symptoms of this disease. Affections of the skin (hard tubercles passing into deep ulcerations) were less common. The ulcers always appeared to spread like the *Lepra* of this country, never losing the circular form. They were mostly to be seen on the larger joints, and on the *tibia* and fore-arm. The colour of the tubercles was of a light brownish-red, and Dr Hjort begged me particularly to observe the remarkable form of scars left by the ulceration. They were either perfectly circular, or at least their edges always exhibited several segments of circles, of a brilliant white appearance, with numerous lines radiating from the centre towards the circumference. It is impossible to describe accurately the scars left by the radesyge, but the description given by Dr Hunefeld, page 22 and 23, is certainly the most satisfactory. *

A solitary example of the wasting away of the muscles of the hand was shown to me while in Christiania by Dr Hjort, who regarded the case as somewhat similar to the spedalskhed of Bergen, as described by Wellhaven and others. The appearance of the hand was most singular. The bones appeared to be merely covered by the skin, and connected by the loose tendons that could be seen beneath it. Not a trace remained of the muscles of the thumb or hand. I was told that such an appearance was frequent in the spedalskhed of Bergenstift. Holst, and Cederschjōld, with others, have confounded the radesyge with the spedalskhed, and considered the one to be merely a variety of the other; but Munk, Hjort, Hunefeld, and the writers of later date, have justly spoken of these diseases as perfectly distinct. If you want to see the true leprosy, said Hjort, go to Bergen; we have none of it here, but only the radesyge.

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* See the description at page 113 and 114 of this Number.

In the hospital at Konsberg, I met with a case of the true elephantiasis of the west coast, occurring in a woman aged about 50, who had never been out of the inland valley in which she was born. The whole face was covered with hardened tubercles of a deep purplish-red colour. These were not painful to the touch, nor had any of them passed on to ulceration. In plate 13 of Rayer's work on the Diseases of the Skin, there is a representation of this disease under the title of "Large tubercules arborisées," which exactly resembles what I saw at Kongsberg. It being summer, there were hardly any cases in the hospital at Skeen worthy of notice. At Christiania, and throughout the whole of Norway, the radesyge is not looked upon as syphilitic; while in Sweden the idea of its syphilitic origin and nature seems generally to prevail, both among the medical men and the common people. The latter frequently call it "Urartad venerisk Sjukdom," &c. According to Hunefeld, Munk is also of opinion that the disease is not of syphilitic origin; but on my questioning the old man closely upon the subject last autumn, he shook his head, and replied, that he had not at all made up his mind about the matter. At Christiania, though the disease is not looked upon as syphilitic, sarsaparilla and corrosive sublimate are much resorted to for its cure. Munk gives sarsaparilla in abundance, with decoction of astringent roots, and corrosive sublimate in small doses, increased till the patient takes one grain daily. This is, I believe, the method of Dzondi, as Munk called it; "Die Dzondisches cur-methode." But I have not been able to meet with that author. Munk also pays the greatest attention to cleanliness, and enforces constant warm and cold bathing among the patients in his hospital.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Die Radesyge Oder das Scandinavische Syphiloid. Aus Scandinavischen Quellen dargestellt.* Von Dr Ludwig Hünefeld, Professor zu Greifswalde. Leipzig, 1828, 8vo. pp. 136. *The Radesyge, or the Scandinavian Syphiloid Disease, delineated from Scandinavian sources of information.* By Dr Ludovic Hünefeld, Professor of Chemistry at Greifswalde. Leipzig, 1828. 8vo. pp. 136.

2. *Erkenntniss und Cur des Sogenannten Dithmarsischen Krankheit.* Von Dr E. A. L. Hübener, Practischen Artse in Heide in Norderdithmarschen. Altona, 1835. 8vo. pp. 111. *The Knowledge and Treatment of the disorder called the Dithmarsch Evil.* By Dr E. A. L. Hübener, Physician in Heide, in North Dithmarsh. Altona, 1835, 8vo. p. 111.

In the eighteenth volume of this Journal, we took occasion, in an account of the works of Frederic Holst and Ludovic Augustus Struve, to give a general view of the whole literary and medical history of the Radesyge down to that time, and to bring before the readers of this Journal such facts on the nature, origin, causes, prevalence, and treatment of that disorder, as might communicate to those who had not access to the original sources a correct view of the state of knowledge on the subject at that period. Since the time now mentioned, several essays and dissertations of various degrees of merit on the same subject have appeared; for instance, the Inaugural dissertations of Gedike,[*] Meyer,[†] Albrecht,[‡] and Brandt,[§] and an essay by Ilisch.[‖] But, without underrating the value of these productions, we may reasonably say that the two essays now before us are preferably

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[*] C. E. Gedike, Diss. Inaug. de Morbo quem Radesyge dicunt. Berol, 1819.

[†] Gust. Ed. Meyer, quædum de Morbo leproso inter rusticos Esthonos endemico. Dis. M. Reval Esthon. 1824.

[‡] Albrecht de diagnosi Esthon. Lepræ Cutaneæ Diss. Inaug. Dorpat, 1825.

[§] Brandt de Lepræ in membrana faucium, narium necnon oris mucosa obviæ diagnosi Diss. Inaug. Rigæ, 1825.

[‖] J. J. Ilisch die Gewohnlichen Krankheiten des Menschliche Körpers mit besonderer Beziehung auf die Landbewohner der Ostsee provinzen und des Russischen Reiches. Dorpat und Riga, 1822.

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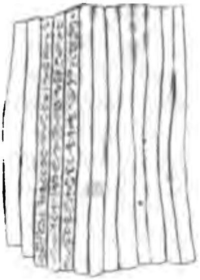

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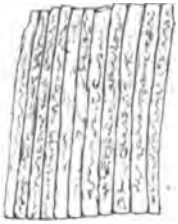

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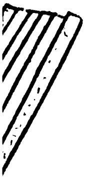

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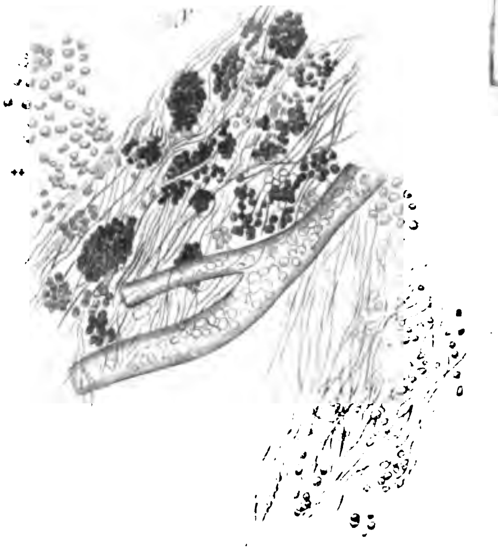

entitled to attention, for the obvious reason, that they have appeared subsequently to either of the works already mentioned; and because they bear evidence of having been written with the knowledge of the facts observed, and the opinions advanced by the respective authors of these dissertations.

In resuming, therefore, after so long an interval, the consideration of the subject of Radesyge, its history, its nature, its causes, and its treatment, prophylactic or curative, it seems to be the best plan to direct attention principally to the contents of the two works now mentioned; and if there be any facts or doctrines of importance mentioned by the others, and not found in the essays of Hünefeld and Hubener, we shall study to introduce them in the proper place.

Of the two essays now before us, that by Hünefeld, which appeared in 1828, is the most complete and comprehensive. The author appears to have taken every means, by personally visiting the different lazarettos and hospitals, to make himself well acquainted with the nature and origin of the disease; and during a visit to Stockholm in 1827, he appears to have enjoyed every facility for so doing, which the kindness of the physicians attached to the hospitals and public boards could furnish.

He had the benefit of receiving from Holst, the author of the dissertation formerly reviewed in this Journal, much valuable oral and written instruction, the result of ten years additional experience. By the kindness of Professor Sörensen, also, he was made acquainted with several good and interesting cases of the disease, and with various important views derived from long experience. His essay was perused by the Archiater Von Weigel, who honoured the author with the communication of his views matured by long experience. Lastly, the medicinal Assessor Osbeck afforded him the opportunity of rectifying and enlarging his views by the light of morbid anatomy. It is manifest, therefore, that the treatise of Professor Hunefeld comes recommended to the notice of the medical reader by circumstances of very great importance and high respectability.

His account of the disease also is applicable to its characters as it prevails in Sweden and Norway; and, as we shall see, he distinguishes carefully two disorders, which have hitherto been confounded under the denomination of Radesyge, viz. the Radesyge proper, and the Spetalsked or Spitelska.

His work consists of six chapters, and an appendix. In the first chapter he treats of the denominations of the disease, and inquires into the etymology, and fixes the characters of the disease as distinguished from others similar to it. In the second chapter he gives a correct description of the symptoms of the Radesyge and its different phenomena in the skin, the mucous surfaces, and the bones. The third chapter is devoted to the subject of Leprosy, as it is observed in Norway and Sweden, and contains an interesting account of the Spetalska, as distinguished from the Radesyge. The fourth chapter contains the diagnosis of the Syphiloid disease or Radesyge, from others of similar character and appearance. The fifth is devoted to the consideration of the causes of the disorder. And in the sixth chapter he describes the treatment required either for prevention or for cure.

Circumstances of local position had induced Dr Hubener, who is a native of the Dithmarsch territory, to make the Dithmarsch distemper the subject of his Inaugural Dissertation, published in 1821; and his subsequent attention to the subject, and frequent intercourse with the diseased, have enabled him to mature and rectify several of the views previously entertained. The present treatise contains the result of these labours.

The treatise of Dr Hubener, though less comprehensive as a general work on the disease, contains, however, a great deal of valuable information, but is more expressly devoted to elucidate the nature and phenomena of the Dithmarsch sickness, and the relations between it and *lues venerea.* The author arranges his materials in nine chapters. In the first, he gives a short sketch of the history of the first appearance of *lues venerea* in the end of the fifteenth century, as preliminary to the consideration of the circumstances under which the Radesyge has appeared in the north of Europe. He then, in the second chapter, enters on the inquiry as to the nature of the diseases described under the name of *Lepra;* and in the third chapter he gives a history of Scurvy; both with the view of showing how closely many diseases of the skin are allied, and for the purpose of showing how the same causes may give rise to a number of similar foul ulcerative disorders. In the fourth chapter, Dr Hubener enters on the history of the Radesyge and the Dithmarsch disorder, and gives a view of its appearance and introduction into the Dithmarsch territory, very similar to that given by Struve. In the fifth chapter he gives a good delineation of the characteristic symptoms, as they progressively appear in the different textures of the skin, the mucous surfaces, and the bones. In the sixth chapter, devoted to the Etiology, he enters into a long, learned, and elaborate disquisition as to its identity with, and its dissimilarity from, syphilis, pseudo-syphilis, leprosy, and scurvy, and considers the influence of the physical circumstances of the Dithmarsch territory as giving origin to the disease. The seventh chapter treats of the prognosis; the eighth of the medical treatment; and the ninth of the dietetic rules to be observed.

Though both authors have evidently been indebted to the previous observations of Struve, Dr Hubener follows him most closely, and indeed, both in his literary history of the congenerous disorders, and in his views on the nature, causes, and treatment of the Dithmarsch disease, he has either followed the track of Struve very closely, or he has gone through the same train of authors. Both also agree with Struve, in regarding the disease as a pseudo-syphilitic or syphiloid distemper. We shall now attempt to give in the present sketch the essence of the information of both authors.

To the readers of this Journal it must be almost unnecessary to say, that the Radesyge is a disease which first affects the skin and mucous surfaces of the face, with redness, swelling, and painful hardness, and then induces phagedenic sores of the mouth and throat, deep ulcers in the skin, adipose tissue, and muscles, and affections of the periosteum and bones. Whatever disparity of opinion be entertained among the different authors as to the disease commencing or not with febrile symptoms, and it appears that on this point no little difference of testimony prevails, it seems now quite well established, that no case commences without more or fewer of the symptoms of febrile disorder. Thus there may be shivering and sense of cold alternating with heat, or there may be only slight and almost unnoticed chills; the pulse may or not be accelerated; but there are always feebleness, dry skin, pains in the bones, and more or less febrile headach.

It is justly observed by Hünefeld, that as it is more or less chronic in its character and progress, and may require several years for its complete developement, it may come on so gradually and insidiously, that the febrile disorder may in many instances escape observation, especially when the laborious employments of the patients are remembered.

I. *Commencement of the Disease and distinctions into stages.*

Though by Hecker, Ahlander, Vought, and others, it is maintained that the Radesyge is manifested as an eruptive and mucous disease without febrile symptoms, or at least a like number are at once affected by it, yet to this may be opposed the observations of Mangor, Munk, Holst, and others, who have particularly occupied themselves with the close observation of this disease. Ronander, whose observation deserves particular confidence, says, " The disease is often preceded by general uneasiness, languor, lassitude, stiffness, and flying pains in the limbs. These symptoms appear to be prevented when the organism has been exposed a long time previously to the predisposing causes of the disease. This uncertainty in the occurrence of febrile preliminary symptoms is observed also in regard to Scherlievo, and other diseases of similar character, so that this subject still requires a large amount of accurate observations. As to syphilis, it appears to be made by a febrile state, so that after a febrile condition of seven or more days, blisters in the skin appear."

Though the syphiloid distemper begins with evident febrile disorder, viz. unequivocal pain in the frontal region, pains in the limbs, more or less fixed, especially in the long cylindrical bones, sometimes there appear among the preliminary symptoms disorders of the eyes, or in their stead, rheumatic pains, catarrhal dryness in the nasal mucous membrane, sometimes a disagreeable itching, creeping and pricking in the skin, yet the mind of the patient is not particularly disordered, as takes place in leprosy in an evident degree, and the syphiloid may often leave the general health entirely undisturbed. Dr Hunefeld thinks, that while leprosy and its allied forms are founded in the excerning part of the skin, the syphiloid distemper appears to consist chiefly in a deranged relation in the secreting mucous membrane.

It may be remembered that Struve distinguishes the progressive symptoms of radesyge into four stages. The first is the stage of febrile disorder and inflammatory affection of the face and facial cavities, indicated by pain in the throat, hoarseness, sneezing, cough, and often a sense of tightness in the chest, and stuffing in the nose, aggravated during the night. The second stage is distinguished by the appearance on the skin of the face and person, of red spots or patches and specks various in size, but resembling measles, with more decided inflammatory symptoms in the throat, as increased hoarseness and swelling of the tonsils, *velum*, *uvula*, and the posterior wall of the *pharynx*. The third stage of Struve is distinguished by the earthy, bloated cachectic appearance of the face, the formation of ulcers in the nose and throat, and the transition of the eruption in various parts of the body into ulcers, with occasional painful swelling of the joints. And the fourth and last stage is that in which the patient is completely hectic, with great debility, night-sweats, loss of flesh and strength, and all the symptoms of general wasting.

Hubener, on the other hand, refers the whole course of the symptoms to three stages; the febrile, inflammatory, or incipient; the ulcerative or established; and the last, or destroying, in which the ulcers assume a phagedenic immedicable character, and the bones are affected with *caries* and *necrosis*.

In the first stage, Dr Hubener places the inflammatory swelling of the palatine *velum*, the tonsils and the *uvula*, the painful dry swelling of the nasal mucous membrane, the transition of these inflammatory symptoms to the formation of ulcers in the nose and throat; and even the appearance of the cutaneous eruption. The latter he represents to appear in various modes, sometimes as a minute vesiculo-pustular eruption, which is speedily covered by small thin pale crusts; sometimes as a hard red, copper-coloured eruption, occasionally going to suppuration; and in other cases as an eruption of a decidedly pustular character.

The appearance of the second stage, according to Dr Hubener, is characterized by the ulcers, especially in the nasal and oral cavities, and in the lips assuming a peculiar brown colour; by the appearance of vesicles like *herpes phlyctænodes* or *herpes miliaris* in irregular groups, and their transition into bad sores; by the harshness and nasal tone of the voice, the destruction of the palatine *velum* and *uvula*, and by the appearance of caries of the nasal and superior maxillary bones, with puriform discharge from the nostrils. At the same time the palate bones, the *vomer*, the alveolar processes of the upper jaw, the nasal process, the *os unguis*, and the lower orbital plates, and afterwards the nasal bones themselves are destroyed; and, with the ulcerative process in the fibro-mucous membrane of the mouth and nasal cavities proceeding at once, the palate and the *velum* are destroyed, and false communications between the nostrils and mouth are formed. In the same stage he places tubercles, warts, and excrescences round the anus and in the perinæum, and pains in the *tibia* and bones of the fore-arm, evidently referable to chronic *periostitis*.

The commencement of the third stage he distinguishes by the transition of the symptoms last mentioned to caries and necrosis, and by the progressive extension of the ulcers in size and depth.

There is some difficulty in applying these distinctions as indicative of the successive stages of the disease; and the difficulty is not diminished by the fact impressed by Sprengel, and in some degree admitted by Hubener, that the symptoms do not in all cases observe the same course, and scarcely allow of accurate distinction as to periods. This inconvenience has been in some degree avoided, if not surmounted, by Dr Hünefeld, who does not describe the disease so much in different progressive stages, as in its effects on the different organic textures. According to this principle, he, in imitation of Ronander, delineates its symptoms as they appear in the three different organic textures; first, the mucous membranes; secondly, the skin; and thirdly, the bones.

II. *Symptoms produced in the different textures affected.*

1. *Affection of the Mucous Membrane.*—The first class of symptoms are seen in the mouth, throat, and nasal cavities, and resemble those of a moderately intense *coryza rheumatica.*

These are redness, swelling, insensibility, and obstruction of the nose, lacrymation, pressure over the *glabella*, sense of tension in the ears, slight, transitory, or permanent and more intense red inflammatory appearance in the *fauces*, so as to cause difficult deglutition, and the sense of a foreign body pushing or pressing in different degrees in the œsophagus.

Pfefferkorn speaks of fetid breath, a bluish-red colour of the gums, and not unfrequently spontaneous salivation. But these symptoms may so often denote a complication of radesyge with a disease from mercury, that they cannot be regarded as uniform.

The inflammatory redness of the *fauces* it is difficult to distinguish from the syphilitic. It is between a carnation and bluish crimson, and is said to resemble that which arises after excessive heating of the same parts. The establishment of a distinction may be impossible to the most experienced practitioners, especially if the condition of the redness be not entirely dependent on the individuals. This is important as to the spots and ulcers which occur in the subsequent stage, which are sometimes paler, sometimes redder than syphilitic spots. In general they are red in strong, and pale in feeble individuals. If they disappear without the use of mercury they return with a deeper red tint. The red colour varies also according to the progress of the disease, being of a pale rose colour, rose-red, a dirty crimson or a dirty bluish-red.

On the *uvula*, the tonsils, the palate, and sometimes on the inner surface of the lips and cheeks, there arise dark-red, copper-coloured, hardish spots, which successively pass into ulcers, which speedily consume, and at length destroy the palate bones. According to Arbo, Ahlander, and Vought, though the tongue may be attacked by this inflammation and red spots, yet this is rare, and happens only in children infected by the breast of the mother or nurse. These ulcers appear in their transitory progress to be preceded more or less evidently by small miliary pimples. The size of the spots varies from that of a needle head to that of a lentile. The small ulcers are at first accompanied by trifling uneasiness, on which account the peasantry give them little attention till they have caused extensive destruction, and have announced their existence by difficulty in deglutition, hoarseness, and noise in the ears.

The *septum* of the nose being previously inflamed, swelled, and obstructed, is readily attacked by this malignant destruction, which is seated either at the inner margin, or externally at its junction with the bones, or near the swelled upper lip; and not unfrequently the nasal *septum* is perforated after a discharge of purulent and bloody mucus has begun.

The ulcers have a dark-red, slimy, blood-streaked aspect, are superficial, surrounded with a deep red edge, are isolated or aggregated, regulating accordingly the subsequent perforation of the bones, and resemble most those which may ensue after the use of mercury carried to salivation. This affection of the mucous membrane may arise either alone or in connection with other symptoms of radesyge. Among 122 individuals of whom Ronander gives a report, 23 suffered particularly from these symptoms; and 15 of these had the affection alone, while in 8 it was combined with other symptoms.

With this, however, observes Ronander, must not be confounded a very frequent, more or less dark-streaked redness in the œsophagus, which sometimes passes into excoriation, but seldom into actual ulceration. This is so general, that Ronander and Martin, among 5000 persons inspected, found the fourth part afflicted by it. It differs from the affection by the syphiloid disease in this respect, that the redness, which in the darkest extends down the œsophagus, and spreads in a radiated direction, is distributed in equal degrees over the whole palate and the tonsils, and that the ulcers are pale red, quite superficial, and do not corrode. This lesion appears throughout to depend on derangement of the digestive organs, probably from the use of sour weak drinks, sour bread, and sour milk,—the principal nourishment of the peasantry during the summer season. It is usually alleviated by change of diet, laxatives, absorbents, and bitters. This affection of the œsophagus and the chancroid ulcers, which are found in that region, especially in aged females, and which are not accompanied with marks of infection, and readily yield to local remedies, appear to belong to the order of hybrid syphilis or pseudo-syphilis, which prevails in other places in similar circumstances.

2. *Affection of the Skin.*—This consists in a tubercular, often pustular and spotted eruption, which generally appears upon the large extremities, the arms, arm-pits, loins, and legs, and sometimes also upon other parts of the person, and may occasionally take place even in the genitals. It begins with small colourless, indolent, moveable knobs, of the size of pease, which, for the most part, possess within an abruptly circumscribed circumference, are sometimes isolated, but more frequently aggregated, so that the eruption presents the appearance of an elevated, uneven, striated patch. After a shorter or longer time, these knobs assume a pale light-red-colour, which progressively becomes dark, and lastly bluish-red, when it is at the same time more elevated on the skin. Of this eruption the terminations may be various. Sometimes it disappears either spontaneously, when the disease falls upon some other texture, or by suitable treatment, under which the red colour becomes gradually less deep, and at length vanishes with the nodules. These then lose their colour, become hard and cartilaginous, and may in this state, by irritating agents, be protracted, but are otherwise without danger. The eruption usually proceeds, however, to suppuration. The nodules soften and enlarge, and are filled first at their apices, and then towards their bases, with a thick or thin yellowish corroding matter,

which dries and forms small yellow scales or large crusts,—which break into small round mutually uniting ulcers; and these enlarge circularly, and at length coalesce into a large corroding ulcer. The latter subsequently increase in depth, have high inverted inflamed edges, and secrete a thin dark-yellow corrosive ichor. They heal with white, smooth, streaked cicatrices, as if traversed with *trabeculæ* or cartilaginous bands, which is particularly the result, when all the small ulcers formed from the nodules have not yet coalesced.

This eruption is easily taken for a mercurial erethism,* when it is imprudently treated with quicksilver, especially with cinnabar fumigation, according to the wonted irritating method. Hereby the whole surface is inflamed, preserves a high light-red-colour, and is very sensible, by which the nodules are again elevated into a circular eruption, imitating the appearance of *herpes circinatus*. These break very quickly into ulcers, which often surround the whole circumference of the circular eruption, have rough irregular inflamed edges, secrete a thin ichorous fluid, and are very sensitive and irritable. Under still greater mercurial irritation, they break into a number of smaller ulcers of the same condition over the whole surface, which quickly enlarge by the edges, while they heal in the centre.

According to the report of Ronander, this form of the radesyge is above all frequent. Of the above number, 73 were attacked by it, and in 17 it was complicated with other forms of this disease.

3. *Affection of the Bones.*—This betrays its existence by a more or less violent fixed pain in the bone, which generally attacks the middle of the most superficial bones, and is aggravated during the night. After a shorter or longer period arise exostoses, which often attain an incredible size, and break into deep foul spongy ulcers, which secrete a blackish thin fetid fluid. As soon as these ulcers have broken out, the pains are diminished, or entirely cease.

This is the most important of all the forms of the eruption in relation to the previous pains. Though during the formation, especially of this form, there be ulcers which previously arose from other causes, yet they assume entirely the nature of radesyge ulcers. This is particularly the case with those which are produced by injury, with scrofulous and erysipelatous ulcers, and perhaps sometimes with those which follow angina, or the above-mentioned pseudo-syphilitic affection of the throat. Excepting scrofulous ulcers, the rose-like saltflow, ulcers (either radesyge or syphiloid) are in the highest degree malignant and obstinate. Even when the disease has been entirely destroyed and favourably healed, there incessantly arise in the degenerated skin new excoriations, which are covered with scurfy crusts, under which ulcers are again formed. This form appeared among the whole number, while Ronander made his observations, only in 10 individuals, and in 9 it was associated with other forms.

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* Does Dr H. not here use the term *erethismus* for *erythema* or *eczema*?

All these different forms are still less frequently with certainty distinguished from each other; but occasionally it may occur united in the same individual, and arise and succeed each other without any determinate order.

To those who have with particular precision distinguished the symptoms of the disease belongs also Hollberg. He regards the radesyge or salzfluss as a primary venereal disease, which by climate, foul and debilitating modes of living, and continued spreading of the poison, has, in the course of passing through several individuals, become changed and ameliorated, and has acquired a chronic condition. As the infectious matter is not propagated by coition, and all the sthenic primary symptoms belonging to the *syphilis libidinosorum* are wanting, this is an evident similarity between the *Lues consecutiva*, and which is asthenic, and the *syphilis insontium*. A weak altered poison is absorbed by an impure surface and developed, when the vital action is increased, as by sweat, &c. by want of cleanliness may happen. It is uncertain how long the infectious matter may be concealed, and a certain recipiency must always concur with the infectious matter, since the one infected bed-fellow may lie with the other without the latter receiving the disease. The *syphilis insontium* presents four variations, the *syphilis insontium, cutaneo-reticularis*, the *S. I. musculo-cutanea*, the *S. I. ossea*, and the *S. I. articularis*.

The period of the appearance of the eruption is not determined. The above specified precursory symptoms, be they in greater or smaller amount, may exist often during a long period, may indeed to a certain degree disappear and return, till at length through an internal cause, or as it most usually happens, through some external condition, viz. remarkable chilling, excessive use of spirituous liquors, getting wetted, the use of much indigestible food, &c. the disease breaks out externally, and the skin at length is subjected to a new formative impulse. Herein, as the general disorder is actually manifested on the surface, the previously violent pains, similar to rheumatic gout, are diminished or entirely cease. Yet he does not on this account term these local affections critical. Nature does not thereby endeavour to heal the disease, but first peculiarly to draw it outwards. He differs also from Holst, in not looking on the affection of the skin as indicating a new epoch in the disease, as this is a very indefinite expression.

The cutaneous efflorescences are lost in a scurfy covering, as the viscid fluid causes crustaceous and scaly remains, and through their crusts inflaming attacks and ulcerates the neighbouring parts. The colour of the scurf is a variable yellow. They adhere sometimes with moderate firmness, split into fragments, and drop off into scurfy scaly particles with intolerable itching.

The syphiloid has no peculiar tendency to attack the bones. But this may readily happen, when it is irresistibly advanced; and these textures are often destroyed with wonderful rapidity, especially in the nose and palate, when the ichorous discharge of the ulcers acquires a malignant corroding character, penetrates deep, and not unfrequently contributes to the formation of a fungous growth, which proceeds from the bottom of the ulcers. The speech is altered, unintelligible, feeble, and nasal.

The eyes and their appendages occasionally suffer in different modes. Moist ophthalmias, with intolerance of light, are not rare. The eyelids may be attacked with ulcers and everted, through which the obscure and lacrymating eye appears rounder, larger, and more prominent. The whole face may be occupied with erysipelatous redness, in consequence of the syphiloid distemper; but it must be by the true syphiloid radesyge, not that leprous eruption and alteration, that an actual *facies leonina* may arise; and otherwise the face and trunk appear to be more rarely attacked. Though *alopecia* or fox-skin may also appear in this case, it seems to occur rarely. The hardened scalp appears among all the parts to remain longest exempt. Whether the *tinea unguium*, which Arbo and Pfefferkorn maintained for a symptom of radesyge, really belongs to the syphiloid, is not established. Struve remarked in the Marschland disease cases in which the nails were split and long, but not properly dead.

These symptoms, as also the thick, cold, and inactive state of the hands and fingers, appear to Hunefeld to proceed from some complication with a leprous form of disease.

Occasionally the hands and feet swell, and are occupied with shining, blue, or whitish slightly elevated knots, which with difficulty pass into suppuration.

The Radesyge may break out in any place indiscriminately; in the throat, on the back, on the belly, especially on parts covered by hair; but the most usual situations are the limbs, especially the external and posterior side of the haunches, knees, armpits, and elbows. According to Ahlander, at the beginning the radesyge appears on the skin; the lower part of the face, the back of the hand, the hairy parts of the head, and also the trunk it seldom attacks. With this statement the generality of observations agree; and though Vought and others except, or seem to except, parts covered by hair and the genitals, this proceeds from the rarity of this symptom, which is not pathognomonic.

Though the syphiloid appears not to attack primarily the sexual parts, yet it may in the course of the disease attack them, as also the gluteal and ischial region, with secondary symptoms, or the infecting matter may produce the syphiloid, without any actual syphilitic poison having been received, and without its being caused by coition. Condylomata rarely appear, buboes very seldom, and gonorrhœa not at all; and the ulcers of the genitals rarely appear in the latter period of the disease. Chancroid sores on the glans, or the prepuce, and within the vulva have never been seen. *Fici* and mulberry-like excrescences, which so frequently belong to the forms of sibbens, are very rare, not characteristic, and have been observed by few. Struve, indeed, saw in a person labouring under the Marschland disease, *vesiculæ* and sores on the genitals, but not on the glans; and in this disease these rare affections of the sexual parts are in no proportion to the effects of the disease in other parts.

Sometimes the syphiloid continues during the whole period of life nearly in the same state. Rudolphi mentions a case in which a girl of 23 years had from childhood laboured under an ulcerous eruption in distinct, small, or large spots, in the arms and legs, and rest of the body, which subsequently attacked the face.

Not unfrequently the disease appears to concentrate itself in an individual point, and to leave the rest of the body completely free, so that the nose, or an arm, or a leg, may be attacked, without the disease betraying itself on the rest of the body. But if the morbid part be healed by local treatment, the syphiloid is wont again to break out in other parts, until it is entirely removed from the body. The scabs and ulcers may disappear and return, without the constitution of the body being materially injured thereby. The ulcers, in short, may heal in summer spontaneously, and break out anew in harvest and winter.

Though the external or proper eruption of the disease, viz. spots, knobs, malignant ulcers, crusts, scaly degeneration of the skin, &c. be as undeterminate in its appearance and course, as are the preliminary symptoms, and may vary in different places and forms, yet, agreeably to the statements already made, he thinks the following general view of the disease may be given.

A. After previous pains of the limbs, *coryza rheumatica*, or other preliminary symptoms, there arise; *a*, copper-coloured or lighter spots on the tonsils, the *velum palatinum*, and which speedily proceed to corroding ulcers, when they are uniform.

Simultaneously, or separately, *b*, insensibility and swelling of the nose, ulcers, caries of the nasal and palate bones. These affections may be either with or without ulcers on the person.

B. The eruption appears suddenly on the person with many malignant ulcers; and after this has proceeded for a time there ensue the following symptoms.

a. Affections of the nose and œsophagus, sometimes of the scrotum and fundament, as also in females of the *labia majora*; or,

b. These are wanting.

C. The nose and adjoining parts are inflamed, insensible, and swelled, yet without the disease extending further.

D. The disease begins suddenly with the formation of small or large tubercles in the bones, which, after longer or shorter time, break into malignant ulcers.

E. Without other symptoms, the disease begins at once with pains in the nasal bones, the soft and cartilaginous parts are inflamed, swell, become ulcerous, and are destroyed in a corroding action.

F. Sorensen, according to his verbal communication in Christiania, Zetterman, and others have also observed cases, in which the disease presented an inverse succession of symptoms, so that first the bony parts of the nose, palate, &c. began to be inflamed and swelled, before the inflammation and other actions had attacked the soft parts. When the disease attacks the arms and legs with exostosis, ulcers, and caries, the face is generally exempt.

The termination he represents to exhibit nothing peculiar, and expresses the sentiment that the disease can no longer terrify patients on account of its termination. Should the radesyge be neglected, and make rapid progress by the enlargement and deepening of the ulcers, it has much the same termination as syphilis and similar diseases, viz. destruction of the organic tissues, hectic wasting, and fever; failure of the corporeal and mental energy, colliquative discharges, and lastly, palsy of the nervous energy.

The muscles may at their surface be attacked by large deep penetrating ulcers, and thereafter be covered with horny imbricated crusts; or they are, as it were, withered and dried up, and appear to pine away, so that the patient is at length not unlike a skeleton covered with a white-gray dead skin. A shocking case of this kind he states, he witnessed in Christiania in the local hospital for syphilis, radesyge, and similar disorders.

Dr Landberg mentions a case, in which the muscles were dried up, and the whole surface of the body was covered with very minute scales as white as flour, so that the patient was named the white man, "hvita man." The *velum* has been lost for some time; and the voice was so hoarse that he could be understood only with difficulty. Death took place by diarrhœa. The affection of the larynx has been known to proceed to laryngeal and tracheal consumption, and that of the bronchial membrane to pulmonary consumption.

It has been a question whether radesyge patients exhale a peculiar odour. Westberg represents them to smell of putrid fish. In fully formed Marschland disease, according to Struve, the patients diffuse a peculiar repulsive smell, especially in the high degree of the spots an insufferable smell of a buck.

Among the symptoms of the syphiloid already enumerated, there is scarcely one which can with any certainty be regarded as peculiar; and the character of the disease is so proteiform, that a very practised eye is requisite to distinguish it with certainty. The mode of living, the condition of the external agents, the whole course of the disease, and other points, must be taken together, in order to enable the young physician to form a diagnosis in any manner certain. Dr Hünefeld had occasion to see radesyge patients in Christiania, and Laurvig in Norway, in Medevi, and Stockholm in Sweden; but he could not say that he was able to distinguish its ulcers from those of syphilitic character. The hospitals in Skeen, Tronthjem, Fleckelfjord, at Vang in Norway, and others in Sweden, he had not occasion to see.

When he visited the Curhaus in Stockholm, he found there a Finlander, who, on account of a relapse of leprosy, had been received into the sick-house. In him he saw clearly the essential difference between leprosy and radesyge.

III. *Description of the Spetälska as distinct from the Radesyge.* Spetälska.

The Radesyge Dr Hunefeld regards as a different disease from the Spetalska, and, after describing the former in the manner already mentioned, he gives a separate sketch of the latter, principally from an account given by J. E. Welhaven, the chaplain of St George's Hospital in Bergen, and which was communicated to the Swedish Medical Society in Stockholm by the Staff-surgeon, Dr Thulstrup, Professor in Christiania.

According to the account of this observer, which is founded on observation for a period of fifteen years, the commencement of the disease is in its first effects very different. In some of the spetalska patients, shivering and cold, similar to those which precede ardent fever, took place; and suddenly blue and red pustules broke out on their persons, and daily enlarged. Others had a certain weakness, lassitude, and tendency to sleep, after which the bad symptoms of the disease began to be remarked. Others felt a sense of violent pricking and itching in different parts, and suddenly after there appeared on the affected parts small tubercles, which quickly and conspicuously increased in size. One man, whose fingers are almost destroyed, felt, when he was 28 years old, the first symptoms of the disease in the left thumb, like the prick of a needle; successively he became lame in the hands and feet, which was evinced in his weak and halting gait. But, excepting the redness of the eyes, he had no spetalska eruptionon the face, and only a little on the hands. A girl felt in the heels pricking and tearing, after which tubercles and ulcers were formed, which, from want of care, penetrated so deeply into the joint, that the lower part of the foot was attached only by a few tendons and fibres; and, without constant washing with spirits and the use of soothing ointments, cold gangrene must have ensued.

Several of these unfortunate sufferers have on the first symptoms of the disease experienced similar pricking and itching pains in the feet, upon which small tubercles have suddenly sprung up and enlarged in the usual manner. Among those in whom the first symptoms of the spetalska appeared with these small violet-red tubercles, there is an otherwise vigorous man who had distinguished himself as a brave soldier in the campaign of 1808. He experienced the first outbreak of the disease after his return from the same campaign, in some small tubercles on the feet, which passed into ulcers; and similar tubercles appeared some time afterwards on the face, accompanied with scorbutic symptoms. Some males feel the beginning of the disease in a particular large swelling in the penis; on which the testicles also swell, and it is difficult for the patients to retain their water. Sometimes this painful sensation increases with the spetalska. In this manner one spetalska man endured great torment from small ulcers in the urethra, so that he could not void urine without the greatest pain, till at length death put an end to his misery.

From the different reports communicated by the hospital attendants, it results, that the disease is occasionally manifested in females at the first appearance of the *catamenia*, the disease is said also in some to commence in the transition from the virgin to the married life; and thus it was in a woman who entered the hospital in 1804. The face was at admission shrivelled and swelled, and presented on the nose a small tubercle, which rapidly increased, and spread over half the face, so as to close the eye, and almost cover the whole mouth. The tubercle had a spungy feel, contained a mass of dead blood, which at length escaped by several openings, after which death quickly ensued. In several married women, the first symptoms of the disease appeared during the first pregnancy.

The spetalska shows itself in some in shape of large and small violet-red tubercles, distributed in variable numbers, which in the course of one or more years, in some instances a shorter period, pass into round corroding ulcers, which do not heal under the remedies usually serviceable to ulcers, but enlarge with sharp hot edges, though in the centre they seem to heal, and may even cover the whole face with a foul scurf, similar to that left after natural confluent small-pox.

In others the disease appears in the form of blue or dark-red spots on the face and person. The voice is also hoarse, the breath short, and speech is nearly impracticable. In these cases, though the pains in the sores are less violent than in the previous class, the disease is, however, very intense, and sometimes quickly fatal, as they are suffocated by a viscid mucus, which covers the internal parts, clogs up the air-passages, impedes the breathing, and causes a dry cough, which in its paroxysms induces violent straining. Many of those affected with the ulcerous boils and sores suffer these suffocating symptoms in common with the blue and red spots, because then the throat and tongue of these miserable beings, so far as can be seen, are covered with pustules, which, like pearls of different sizes, are distributed over the membrane backwards to the throat, and probably, in like manner, extend into the windpipe and bronchial tubes. To this stifling hoarseness, the peasantry apply the denomination of Kiöve. [Swedish Kofvet.]

In a proportion of the spetalska patients, the disease shows itself in a brownish wrinkled aspect, which gives in young persons the appearance of hideous wrinkled age, while the swellings cause intolerable itching, and gradually proceed to painful ulcers. These have besides ulcers on the feet.

In some Spetalska patients, though the body may be free from ulcers, yet the symptoms of the disease are unequivocal. In these the eyes always contain a thick watery glistening fluid, with an unsightly redness under the eyelids, which causes intolerable smarting, especially in sunshine and warm weather. The hairs of the eye-brows, in such patients, as also in the other spetalska cases, are wont to drop off suddenly. The members and joints are the seat of a pecular lameness, which resembles that following apoplexy, and much pain is felt in the bones.

During spetalska many become entirely blind, in consequence of a thick coating formed of the scurf and slimy fluids being extended over the eyes. Some are attacked with specks or webs, and in others the eyes are swelled. It is not rare for the small bones of the fingers and toes to drop off in many who suffer by this corroding disease, which gnaws and consumes into the marrow and bone.

In some the disease is evidently presented in the feet, which become shapeless, twisted, and lamed, and very similar to those of the elephant, while the toes are sunk in the enlargement, and can scarcely be seen. Such patients have a peculiarly feeble, painful, and jolting gait, which betrays a certain lameness in the knees; and in others it is felt in the hands and fingers. In other respects the appearance of several of these patients is fresh and healthy.

Part of the diseased members of the bishopric appear at first sight to be quite fresh, and yet present in the breast, back, legs, and feet cancerous ulcers, which in some have attacked a great part of the body.

Of such persons affected in different modes, there were at the commencement of 1816, when the Report of the Chaplain Welhaven was drawn up, the number of 66 in St George's Hospital in Bergen.

It is extremely difficult to ascertain the causes of this disease; and for a long time various conjectures, supported certainly by probability, have been made. The disease has been especially ascribed to the wonted mode of living of the peasantry, their clothing, food, dwellings, and neglect of their persons; and herein it is admitted, that several important deviations from the general rules of health are recognized. To the climate also, and the physical surface of the sea coast, as well as the humidity in which the inhabitants spend their lives, much has been ascribed in accounting for the origin and prevalence of the disease.

It is justly observed, however, by the Chaplain Welhaven, that, admitting these circumstances to be causes of the disease, it is still not explained why it attacks any one or the other of several members of the same family, who live in the same locality, use the same food, carry on the same occupation in society, undergo the same labours, are exposed to the same weather, dwell and sleep under the same roof, nay, often in the same bed, use the same food and drink at one table, and among whom not the smallest deviation from the general mode of living can be imagined. Is it then to be admitted, he asks, that in the frames of some a seminal principle of the disease may lurk concealed, and may be developed into action at different periods, under the use of certain articles of food, or under the influence of the air, in the sudden vicissitudes of the weather, and the repeated use of wet clothing, by suppressing the perspiration and action of the skin?

It is nevertheless in favour of the idea, that the climate and the physical characters of the country have some considerable influence, that every year affords proof that, among the horned cattle, different spetalska animals are found. In these the disease appears in the form of tubercles below the skin, and blue boils on the body, and even in the liver and lungs. Such spetalska cattle are observed in the Wosse-Socken and the surrounding district. In these animals it has been impossible to assign the causes of the disease. Were they sought in the weather or in the pastures, it ought to affect whole herds which occupy the same pasture grounds.

He thinks it probable that the peasantry may readily contract diseases, from the sudden vicissitudes of heat and cold to which they are often exposed in their arduous and laborious occupations; and that the spetalska is principally caused by chilling is not an absurd idea.

A man affected by the disease asserted that after hard labour at sea, in which he perspired violently, and immediately became cold, he felt a fit of shivering, which was followed by violent swelling over the whole body, and then by the sudden appearance of spetalska tubercles. A young man in the hospital had, as a herd, undergone much suffering with bare feet and ragged small clothes, which were often completely wetted; sometimes he had spent a miserable life in frost and foul weather; and to these circumstances he ascribed the origin of the spetalska, which began with loss of power in the limbs, scabious ulcers and small tubercles, were manifest. The author thinks it probable, since many of the peasants greedily drink cold water when perspiring profusely, go after enfeebling labours in wet clothes, and even sleep in them, and since in their out-door labours in the spring, they inhale unhealthy vapours from the ground, especially when they take their repose on it,—that these circumstances may act as causes of this singular malady. In proof of the efficiency of the last specified cause, he mentions the case of a spetalska patient, then dead, who imputed to this the probable origin of his disease, as his body, after a rest of this kind in the fields, swelled, and many hard spetalska tubercles broke out on the breast. He thinks also that in some the insensible transpiration may be suppressed by inattention to cleanliness, and that in others fish not well salted, and at the same time indigestible, may be eaten, especially the liver of fish and the fat of herring, which the peasants in some places eat and use as sauce. These, however, he allows are mere conjectures, and he admits it to be still unexplained why, among so many persons who observe the same mode of life, some only are attacked with spetalska, and these may be among the most regular of the people.

Many of these unfortunate persons are unable to assign any reason for their disease. But he thinks it proved, however, that the spetalska is sometimes propagated from the parents to the children, especially on the mother's side, and of this he adduces among others admitted into the hospital three cases.

The disease may also be communicated by concubitus; and of this he mentions an example in the case of a woman who was perfectly well before marriage, and who became affected with the disease afterwards. This couple were received into the hospital with a daughter six years of age, who presented no symptom of the disease, and, on the other hand, enjoyed the most perfect health, had a strong well-made frame, and a considerable degree of personal beauty, and, after the death of the father, quitted the hospital in health. According to the testimony of the mother, her husband had no symptom of the disease at the period of the birth of the daughter, but the symptoms made their first appearance about a year after. Among a family of six sisters, he was the only individual, and also the youngest, whom the disease attacked. The parents were healthy; but it was ascertained that the aunt of the grandfather had been affected with the disease. How it passed through these steps to this man he admits his inability to comprehend.

Conversely, he mentions cases of children affected with spetalska sprung from healthy parents, but one or other of whose preceding relatives had presented its symptoms. In one case, a woman who died in the hospital had, when in a state of health, born to a healthy husband three children, all of whom became diseased and died in the hospital; but her fourth child, which she bore after she had became affected with spetalska, was then living in the parish of Socken, an agricultural labourer, 42 years of age, and in the enjoyment of robust health. Lastly, he mentions another case of a person who, having been born of spetalska mother, was, in the 9th year of his age, brought into the hospital as one suspected to be infected, and who spent the most of his days in the hospital to his 63d year, without any symptom of the disease being discovered in any part of his frame, and who, on the other hand, enjoyed the best health and particularly good corporeal vigour. From these facts he thinks it must be inferred, that, though spetalska is occasionally propagated from parents and other relatives to children in the descending line, it is not always propagated in this manner. It is further remarkable, with regard to this person, that though he was in the closest intercourse with patients most inveterately affected by the disease, yet he never was attacked by it.

All these facts, we conceive, lead to the conclusion, that, if the disease be really communicable by contact or personal intercourse, the efficiency of this mode of communication must depend more upon the state and disposition of the persons to whom the disease is propagated, than of those from whom it is propagated. There must be in the persons of those in whom it thus appears some peculiar disposition which favours the origin and developement of the distemper. The chaplain adds, that he never knew any of the nurses attacked; and many of the labourers of the town, he saw on Sundays occupy the same seats with persons deeply diseased, yet without betraying any apprehension of being infected, and without showing symptoms of the disorder.

In relation to the predominance of the disease in certain localities, the chaplain found that the number of spetalska patients from different districts was very dissimilar, and that some parishes furnished many more cases than others. But it is remarkable, that no spetalska cases came from Sunds and Aschoes parishes, where the fishermen live, where, especially in the spring fishery, they endure many hardships, and are exposed to keen wind, and live closely together in foul huts, with wet clothes.

Of the 66 patients who at the period of the report were in the hospital, there were,

Mangers Socken,	1 male and	3 females.
Lindas,	2	1
Hammers,	4	3
Askevold,	2	2
Indrekalmedal,	0	1
Förde,	0	3
Kind,	0	2
Sellö,	1	0
Sogndal,	6	0
Leganger,	2	1
Edingvig,	0	1
Leirdal,	0	2
Lyster,	0	1
Jölster,	0	2
Wose,	1	0
Wigör,	1	0
Storöen,	2	0
Tysnas,	1	3
Ous,	1	0
Fana,	0	1
Hang	1	10 ; of the last 3 were nurses.

IV. *Diagnosis.*—Both authors have been at much pains to establish a correct diagnosis of radesyge, and to distinguish it from leprosy, scurvy, and syphilis ;—Dr Hünefeld in his fourth chapter, and Dr Hubener in his three first chapters. Into this disquisition, our limits will not permit us to enter at large ; and though the fourth chapter of Dr Hünefeld is recommended as particularly entitled to attentive perusal, we must notice this part of the subject in a brief and cursory manner only.

On the distinction between the Radesyge and the Spetälska enough has been said.

We think there is no great chance of a correct observer confounding the radesyge with the tubercular or Arabian leprosy ; and, therefore, though we allow that both authors, but particularly Hünefeld, have given a clear view of the diagnostic symptoms, yet we regard it unnecessary to repeat them.

With the scherlievo of Dalmatia, and the sibbens of Scotland, it is, however, more closely allied ; and in many respects the radesyge agrees with both diseases. With the former it agrees closely in the affection of the nasal and guttural mucous membrane, in the character of cutaneous eruption, and in the formation of ulcers on the skin and soft parts, and affection of the periosteum and bones. Hunefeld thinks the resemblance so close, that he regards it as highly probable that they are similar diseases, which arise from the same causes, and are propagated in the same manner.

The resemblance of radesyge to the Holstein Marsch disease or the Dithmarsch disease, Hunefeld also allows to be close and accurate in all essential points, and he follows Struve in thinking that the slight deviations are quite unimportant, and, such as might be justly ascribed to the difference of climate, mode of living, and other peculiarities in the physical and domestic circumstances of the inhabitants.

Upon this resemblance, however, the other authorities are not equally unanimous. Messner, a parochial inspector in South Dithmarsch, who spent much of his leisure time in medical study, regarded the disease as venereal-scorbutic, or the effects of venereal poison operating on the scorbutic disease,—a notion which also seems to have been maintained by Fischer, Professor of Medicine at Kiel, who, in 1801, by authority of the College of Health of that city, visited the Dithmarsch district, and saw the persons afflicted by the disease. Brandis, on the other hand, who, in the spring of 1806, travelled through the villages of Itzehoe, Wilster, St Margaret's, Eddelack, Meldorf, and Heide, referred the Dithmarsch disease to the head of radesyge; and the Royal College of Health of Holstein, expressed in their report the opinion, that it had been imported into Dithmarsch between 1785 and 1787, at the time of the embankment of the Crown Prince's meadow, by the labourers from Norway, and that it resembled the radesyge.

In 1801, Dr Hubener, in the inaugural dissertation already mentioned, promulgated and studied to establish the doctrine that the Dithmarsch eruption is a native of that district, and that, though similar to radesyge, it was not sprung from it, but was of higher antiquity than represented by Struve, and that it was never contagious; and this opinion he distinctly repeats in the present treatise. "This disease," he contends, is neither epidemic, nor is propagated by contagion, but is an endemic distemper." (p. 33. chapter iv.) At a subsequent passage of the same chapter, while he admits that the Dithmarsch disease nearly resembles syphilis, he maintains that it is neither leprosy, syphilis, nor radesyge, nor scurvy, nor sprung from any of these disorders.

It is unnecessary to pursue the diagnostic observations into the question of the resemblance to scurvy or syphilis. Whatever probability the influence of situation and physical causes may give to the idea of its connection with the former disease; —or the external characters and course of the disorder to the notion of its connection with the latter, both Hünefeld and Hubener agree in regarding the radesyge and the Dithmarsch eruption as entirely different from both.

V. *Etiology*.—No subject perhaps has given rise among the physicians of Sweden and Germany to so much inquiry and doubt as the causes concerned in the production of these diseases. The great prevalence of the disorders among a most useful and numerous part of the population, the misery and helplessness which they produce, and the little relief which either admits from medical measures, we may say in many instances their complete insanability, have made the local governments endeavour, with great anxiety, to discover the causes on which they depend, and to devise means for preventing their rise and propagation. Both authors have attempted the investigation with great care and attention; and neither have arrived at any satisfactory conclusion.

Dr Hunefeld directs attention first to the influence of moisture, as evinced by the prevalence of the disease in maritime and insular situations, or in localities with a large extent of sea coast, and then to its selection for patients from the fishermen, and the filthy peasants and labourers. Red-haired persons, it appears, are more generally attacked than those whose hair is of other tints. He represents it to be more general in elevated and woody than in flat districts, in consequence of the indigence and filth which prevails.

Its general prevalence in Scandinavia he ascribes to the situation of that peninsula, placed between the 56 and 72 degree N. lat.; mountainous, covered by snow, and traversed by water; with cold winters, and moist, cloudy, rainy harvests. The climatic and meteorological peculiarities of the Holstein and Dithmarsch territory he represents to be in all essential circumstances similar. Placed in latitude between 57 and 59, and between 39 and 46 Longitude from Ferro, it suffers from cold winds, damp harvest air, thick clouds, frequent rain, the vicinity of the sea, marshes, and rivers in profusion, fishing occupations, filth, scanty innutritive food, and the excessive use of spirits. These statements are fully confirmed by Dr Hubener, himself a native of the Dithmarsch district, who has enjoyed good opportunities of knowing them and observing their influence. The position of this district, which we described in the article on the work of Dr Struve, we need not now recal to the remembrance of our readers. But we must say that Dr Hubener attaches just importance to the vicissitudes of the weather of the district, the great changeability of the winds, which vary two or three times daily, and the early approach in September, October, and November, of cold wet weather with rain. The surface also being flat and intersected with ditches, containing filthy impotable water, must tend to injure the health of the inhabitants.

In both countries the food and the general mode of living among the inhabitants are justly believed to be possessed of considerable influence. Thus we are informed that the fish eaten as food are fat, dried, salted, and smoked, or half putrid; that vegetables are scanty; that the mutton and pork, from badly fed animals, are hard, salted, and rancid; that the bread is unfermented, mostly of bad oatmeal, or from want of wheat prepared with clay or bark, or consisting of ground bones, dried fish, prepared with bark or Iceland moss. Equally detrimental is the drink believed to be, viz. water or a sour fluid prepared from wheat with milk, and in summer curdled milk or weak acid beer, aided by the frequent use of a weak species of brandy. Though Dr Hunefeld thinks, from personal observation during his travels in Scandinavia, that the influence of the causes now specified has been overrated, he allows, that it is highly likely, that the deficient and monotonous style of diet, in conjunction with the operation of the moist, cold changeable atmosphere on the foul skin, causes a predisposition, and gives the chief cause, viz. the syphilitic contagion, a modified form.

In the Dithmarsch territory the inhabitants live principally on farinaceous food of inferior quality, and sometimes corrupted, cabbages, turnips, potatoes, highly smoked and pickled articles, fish, and articles in general of difficult digestion. A chief article of food among many of the Dithmarsch inhabitants is buckwheat grain. Then comes the use of the impure water; and he adds, that the purifying machine of Pfaff he saw in few houses, and that Artesian wells, by which pure water might be procured from a great depth, have not yet come into use in Dithmarsch. Besides these, badly fermented beer, much sour milk, and brandy, prepared exclusively from potatoes, are much used.

To the concurrent operation of these causes, Dr Hubener ascribes the formation of the disease, and these he thinks give the disorders in Dithmarsch a gastric character, which demands for its removal the use of emetics and laxatives, while in other parts of Germany the popular disorders are more inflammatory, and require the use of the lancet. The disposition, in short, denominated by several of the German physicians *gastricism (gastricismus)* predominates. Gastric catarrhs, rheumatism, and gout are daily disorders. For all these reasons he maintains that the fact adduced by Struve, from the Report of the Royal Health College of Keil, as to this disease having been imported from Norway by labourers between 1785 and 1787, at the embankment of the Crown Prince's meadow, has been admitted on insufficient grounds, and that the mere circumstances of the climate, the bad water, the food, and the mode of

TYPHOUS FÆCAL CRYSTALS

Fig. 1.

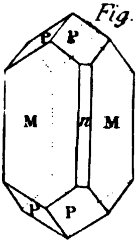
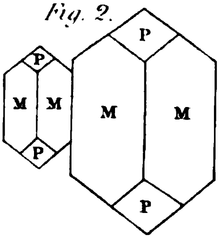


Fig. 2.



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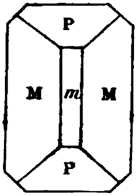

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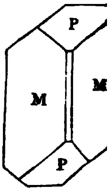
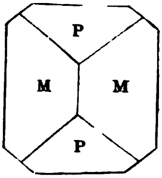


Fig. 5



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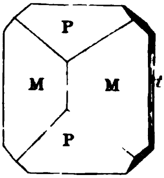

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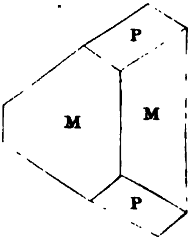
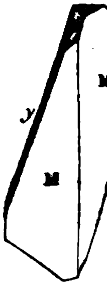


Fig. 8



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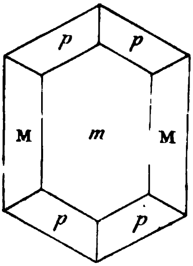
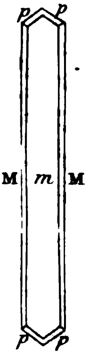


Fig. 10.



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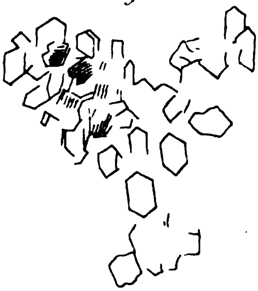
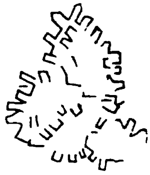


Fig. 12.



URIC ACID CRYSTALS.

Fig. 13.

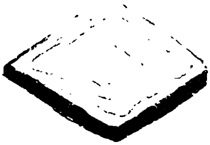


Fig. 14.

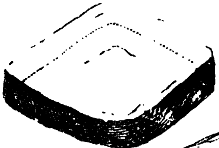


Fig. 15.

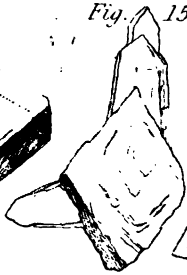


Fig. 16.

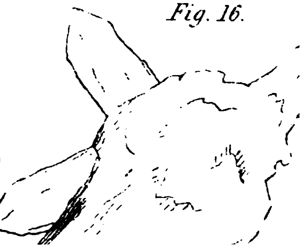


Fig. 17.

life generally observed in the Dithmarsch territory, were sufficient to induce in strangers exposed to the vicissitudes of the weather, and engaged in the execution of laborious operations, a cachectic state and the Dithmarsch disorder, without having recourse to infection.* The disease, in short, he maintains to be altogether endemial, and indebted for its origin and propagation to endemial causes.

Regarding this question of importation at the period of the embankment now mentioned, it may be proper to mention, that, though Struve mentions the fact as stated in the Report of the College of Kiel, he does not, so far as we can perceive, speak of it so confidently, as from the representations both of Hunefeld and Hubener might be inferred. Although he allows that the origin of the disease may be probably traced from this period, yet he maintains at the same time that further research and particular investigation are required to determine, whether the disease actually made its first appearance at the time of the embankment of the Crown Prince's meadow; whether Norwegian labourers affected with the disease were really engaged in the embankment; and whether the disease had not, at an earlier period, been prevalent in Holstein. He further asks, whether there be not grounds to render it probable, that the disease is endemial in Holstein, and may prevail epidemically; and he contends that if, on the one hand, there are cases in which all infection, which must take place on the supposition of the disease having been imported from Norway, must be denied,—there occur, on the other hand, cases in which the disease breaks out after previous catarrhal fever, without manifest local infection, which may be probably only the channel of importation; and he admits that many phenomena give a contrary view, as is clearly shown, partly from the description of the disease, partly from its etiology.†

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* It may be proper to mention, that the piece of land here referred to is a tract 2600 roods long, and 600 roods broad, lying on the left of the borough of Marne, and was gained from the waters of the Elbe by a very expensive embankment. The term Koeg or Koog applied to it properly means that kind of alluvial flat soil extending along a river bank, which in Scotland is called Carse, but to which I am not aware that the English language affords any corresponding term. It has been therefore rendered Meadow, though, strictly speaking, this does not convey a correct idea of the object.

† "Wenigstens giebt es Falle, wo jede Ansteckung, die doch statt finden musste, wenn das Uebel von Norwegen aus ubertragen worden sey, durchaus gelaugnet werden muss; es giebt Falle, wo die Krankheit nach vorhergegangenem Catarrhalfieber, ohne sichtbare Localansteckung, die doch wahrscheinlich allein das Mittel der Uebertragung seyn würde, ausbrach; und ueberhaupt giebt es manche Erscheinungen, die dagegen sprechen, wie dies theils aus der Beschreibung der Krankheit, theils aus der Aetiologie derselben erhellen wird. Genaue locale Nachforschungen uber die Eindeichung jenes Koeges, uber die dabey angestellten Arbeiter, Nachfragen uber das

The arguments and opinions now stated, the original of which we subjoin in the note at the foot of the page, have led us to doubt whether either of our authors have perused the treatise of Dr Struve with the attention which it merited; for most assuredly, whatever weight he attached to the report of the College of Kiel, it is quite clear that he did not absolutely and implicitly adopt its sentiments; and while respect for the body and its researches led him to give its substance a place in his pages, he did not subscribe to all the conclusions and consequences therein contained. It is evident, not only from the passage now quoted, but from the whole tenor of his work, that Dr Struve did not believe implicitly in the contagious origin and propagation of that disease, and that the facts with which he daily met, compelled him to conclude, that the evidence for this opinion was insufficient, and that the question required a good deal of further investigation.

Dr Struve wished new inquiries on the facts regarding the embankment of the tract so often mentioned, and he expresses the opinion, that if these inquiries were conducted by the oldest physicians of the district, they might be expected to throw some light on this problematical point. Dr Hubener has undertaken the inquiry with the benefit of the previous observations of his father, and he thinks that there are just grounds for believing that the disease owes its existence to telluric, meteorological, and economical circumstances in the position of the inhabitants,—that, in short, it is endemial and not contagious.

If, indeed, the disease be infectious, it is not easy to perceive why the different inquirers into its nature, and the causes concerned in its production and propagation, should attach so much importance to the influence of locality, climate, mode of living, and the nature of the food and drink of the inhabitants. If it be really contagious, like syphilis, itch, or sivvens, then its propagation will take place indiscriminately, with little or no regard to the influence of these causes. If, on the other hand, locality, climate, mode of life, and scanty or innutritive food, with exposure to atmospheric vicissitudes, are adequate to produce the disease, as in scurvy, to have recourse to contagion, is to seek for an obscure and impalpable agent, where its presence is gratuitous, and to ascribe to the operation of a cause, the existence of which is questionable, if not apocryphal, the production of phenomena which are the concurrent effect of several evident circumstances. This is to violate a rule, not less obligatory in

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Vorkommen dieses Uebels besonders bey dem Aeltesten Aerzten des Landes u. s. w. wurden hoffentlich eineges Licht über diesen fraglichen Punkt verbreiten."—§. 35. Ueber die Aussartzartige Krankheit Holsteins. Von Ludwig August. Struve, p. 28.

philosophical inquiry, than in accounting for the dramatic incidents of human affairs.

> "Nec deus intersit, nisi dignus vindice modus."

Notwithstanding the manifest inconsistency here remarked, Dr Hünefeld is inclined to ascribe the propagation of the radesyge to infection and communication by contact; and in the adoption of this view, he appears to have been unable to divest himself of the influence of the example of Vought, Ahlander, Beyer, Von Weigel, and others. In support of the doctrine he mentions cursorily the usual modes of communication repeated by almost all authors; as dirty clothing, using the same drinking-vessels, tobacco-pipes, foul beds, &c.; but does not speak as if any distinct cases had come under his own observation.

V. *Prognosis and Treatment.*—In this respect we find that the medical doctrines of the northern physicians have undergone within the last twenty years some change. At one time, radesyge was believed to be a disease so rarely cured, that it was generally considered as incurable. Struve, by demonstrating the happy influence of diet and the hunger cure, * has shown that this idea was adopted on insufficient grounds. Dr Hünefeld allows at once, that radesyge belongs to the class of curable diseases when it is merely syphiloid, and not complicated with leprosy; but he regards it as incurable when hectic fever has commenced. In other respects, he adopts in the prognosis the indications and distinctions of Struve, and regards the disease as most curable in the early stage when it is in the shape of spots and sores, and is confined to the soft parts, but less curable when the disease is general, and has formed large ulcers and tubercles, and swelling and caries of the bones. The cure of ulcers of the throat and nose is particularly difficult. In young persons, recovery is more easy than in the aged, and summer is more favourable than winter. Dietetic measures have rendered the prognosis more favourable.

The views on this subject, entertained by Hubener, are so similar, that to give them would merely cause repetition.

In the account of the particular therapeutic measures to be pursued, Dr Hünefeld confines himself chiefly to the specification of the different modes of treatment recommended by different boards, and different individuals; and it is chiefly on the authority of others, and not his own experience of the therapeutic powers of each that he speaks.

Mercurial remedies obtain the first place in his consideration; the second is assigned to antimonial and sulphurine medicines;

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* Craigie's Elements of Practice of Physic, Vol. i. p. 698.

and in the third place are arranged arsenic, sugar of lead, and corrosive sublimate, which has been strongly commended by Ratzki. The vegetable kingdom affords a numerous class of agents, viz. guaiacum, hemlock, sassafras, China root, sarsaparilla, juniper, hops, soapwort root, mezereon bark, *Sedum palustre*, burdock root, water trefoil, blessed thistle, celandine, elm bark, taraxacum root, chervil, and others, all of which have been used either alone as drink, partly in connection with others, especially mineral remedies.

Ronander, whom he mentions as one who has studied the disease and its treatment with the most scrupulous accuracy, employs mercury in two modes. The first is in the form of inunction, sometimes by common blue ointment, sometimes with the solution of the oxide of quicksilver in lard, which is believed to have the advantage of being a more efficient form of the medicine, and to be more easily received by the organism. Another method of mercurialism employed by Ronander is that of fumigation by means of a mixture of five grains of cinnabar, five grains of litharge, and five grains of colophony or resin. This must be preceded by the employment of laxatives and low diet, and accompanied by the latter, until sweating is produced. Salivation usually takes place, after from the fifth to the eighth fumigation. Its use is followed by the employment of the China-root decoction.

The dietetic method of treatment is allowed on all hands to be the most efficient. Of this the method employed by Osbeck, chief physician to the Venereal Infirmary of Stockholm, which agrees in principle with the hunger-cure of Dr Ernest Struve, furnishes the best example. This consists in allowing the patient at first, without the previous use of emetics or laxative remedies, five ounces of beef, veal, lamb, or fowl boiled without fat or other sauce, and two French rolls, weighing about six ounces, baked with water, to take daily in divided portions. If the appetite is increased, the animal portion of the diet to six or seven ounces. No other nutriment is allowed the patient for a space of six weeks. One of the occasional effects of this mode of diet is a constipated state of the bowels for from eight to fourteen days, yet without bad effects to the ultimate cure. But if colick pains come on an enema is administered.

The medicinal means used in this method are pills of the extract and powder of wild chervil, [*Chaerophyllum sylvestre*,] decoction of China-root, and pills of corrosive sublimate (bichloride of mercury,) according to the fourth edition of the Swedish Pharmacopœia. Externally Osbeck employs the black-wash, decoction of China-root, tincture of myrrh, or decoction of China with sugar of lead.

Among mercurial remedies, the one most strongly recommended by Hubener is corrosive sublimate (bichloride,) either in the form of the liquor of Van Swieten, (two grains to eight ounces of fluid.) or in the form of pill with opium, as in that of Richter, each containing the twentieth part of a grain,—or, according to a formula of his own, the tenth of a grain,—or with sulphuret of antimony and opium, as in those of Dr Duhrsen of Meldorf, a village in the Dithmarsch territory, each also containing between the tenth and the seventh part of a grain.

Of fumigation he also speaks favourably. Decoctions of the woods next claim his attention, and, besides the formulæ employed by Struve and Duhrsen, he gives one observed by himself. All of them agree in containing guaiacum bark, sarsaparilla, China root, and senna leaves; that of Struve's contains the tops of bitter-sweet; and that of Duhrsen contains burdock and fennel seeds. These decoctions, he adds, were employed by Struve, Duhrsen, and himself, along with corrosive sublimate freely. The effects he states to be augmented secretion from the skin and kidneys; and the more concentrated the decoction, diaphoresis is more augmented, while the weaker it is, diuresis is most abundant. From the decoction of Pollini and Zittmann he adds, William Sprengel observed no benefit to result.

The third class of remedies mentioned by Hubener is that of purgatives; and for this purpose he employs chiefly calomel and jalap, the former in the formula of Duhrsen, in doses of from 6 to 8 grains, and in that of the author in doses of from 8 to 10 grains, the latter in the quantity of half a drachm. For this large dose he thinks it requisite to make an explanation, deduced from the torpid state of the bowels. He is quite right in using large doses of calomel; for when that mineral is to be employed as a cathartic, a large dose is much better and safer than a small one. Under 6 grains it may be said to be never of any service, and the nearer it is to 10 grains, it will be the more likely to produce cathartic effects.

Of the sanative effects of nitric acid as a remedy employed by his father in this disease he speaks favourably. Dr Hubener senior gave a drachm of the acid much diluted with water in the course of the day.

William Sprengel, he adds, saw from the chloride of gold given in doses of from one-tenth to one-sixth daily, good effects ensue in one case of this disease; but he allows that the disease afterwards recurred, and that the mineral was followed by spitting of blood in individuals not disposed to disease of the lungs.

Among the external remedies the chief, and indeed the only applications of which he speaks are lotions of corrosive sublimate, with opium, or some of the woody decoctions or tinctures.

On the comparative merits of these different modes of treatment neither of the present authors give us from themselves any pointed information. But Dr Hünefeld, whose attention was directed to this view of the subject, and who farther thinks that, from what he has seen, the simplest method by mere dietetic measures, is the most efficacious, has given, in illustration of his opinion, in an appendix, a very valuable series of tables, showing the results of different modes of treatment, followed by the report of the physicians, Von Weigel, af Edholm, Hagströmer, Rooth, Trafvenfeld, and Curlander. Our limits will not allow us to introduce these tables in this place, and to give an abstract of the report would not do it justice. But if we can spare room in the Medical Intelligence, we propose to give them there, and the valuable report founded on them, at large.

ART. II.—*Mémoire sur une maniere nouvelle de pratiquér l'operation de la Pierre, &c. &c.—Account of a new mode of performing the operation of Lithotomy.* By the Baron DUPUYTREN, Surgeon in Chief to the Hotel Dieu at Paris, &c. Completed and published by J. L. SANSON, Surgeon to the Hotel Dieu, and L. J. BEGIN, Surgeon in Chief and Professor at Strasburg. Fol. Paris, 1836.

FEW more honourable marks of attachment and confidence can be exhibited by one man of science to another, than the Baron Dupuytren has shown to his friends M. Sanson and M. Bégin, by entrusting to them the completion and publication of his posthumous work on the operation for the stone. These gentlemen entered upon their interesting duties with every feeling of respect to his memory; and in bringing forward the present lucid and elegant publication, they have evinced no less regard to the credit of French surgery and the advancement of chirurgical science, than to the reputation of their deceased friend.

It appears from some introductory observations, that about one-half of this work was printed during the lifetime of the Baron; that a small portion of manuscript in continuation was put into the possession of the Editors by Dr Marx, after his death; and that the remainder was composed by themselves, from the knowledge which they possessed of M. Dupuytren's views and doctrines. They were anxious that their part of the work should not fall below the model which was left them as their guide; and in expressing their own feelings on this subject, they give the following interesting and perspicuous developement of the pursuits, habits, and endowments of the author.

"In effect," say they, "although devoted entirely to the practice of surgery, to which he communicated a character of prudence, method, and rationalism *(rationalisme,)* if we may be allowed to borrow that expression, which were unknown to it before his time; although he divided his life between the laborious functions of a teacher, and the duties imposed on him by public confidence; in a word, although he was a man of action in all the strictness of the expression, and his fame, like that of Desault, was founded rather on the communication of his discoveries by a sort of tradition, than on the number or extent of his publications, Dupuytren wrote in very excellent style, as is proved by the too rare memoirs in which he made known some of the practical discoveries with which he enriched science. These it was his intention to publish in succession, in the manner of the present work. But the thing is, that rigid even to excess in what concerned himself, he was difficultly satisfied with his compositions; believing always that some fault could be corrected, or some improvement made; and yet his ideas were lively and energetic, his turn of expression often original; and his phraseology, particularly that of the first impulse, for the most part correct, abundant, and perspicuous."

In commencing the present memoir, the author states it as his intention to examine, whether the operation for the stone is really one of the most difficult and dangerous in surgery, notwithstanding the various improvements which have been made in it; whether, in this case, its difficulties and dangers are inevitable and inherent in the nature of things, or dependent on the imperfect means hitherto adopted for arriving at the bladder, and extracting the stones; and whether a more correct knowledge of the anatomy of the parts concerned in the operation, may not lead to a more sure, and a less dangerous mode of performing it.

The *first section* is on the dangers of the operation of lithotomy and their causes.

It was in the year 1812 that Dupuytren had occasion to offer, at a public disputation, the opinion, that the operation of lithotomy had arrived at all the perfection of which it was capable; and that the utmost which art could do further was to point out the respective merits of each operation, and to obviate the inconveniences which might attend them. In these sentiments, he seemed to be followed by all the principal French Surgeons; for Roux, in his work on England, gives it as his opinion, that for a long time past all had been said which could be said, and almost all had even been imagined which could be imagined, on the subject of lithotomy.

The investigations to which M. Dupuytren was led, in consequence of the strong opinions which he was at this time induced to entertain, soon presented to him the unfavourable character of all the operations in use; and pressed upon him the importance of devising one which might be less fatal in its results.

It appears from the statement given of the origin of his conviction on this subject, that this part of the present memoir was written as far back as the year 1825; for the author, in mentioning the period at which this opinion was broached by him, says it was *thirteen years ago*, ("il y a treize ans,") and refers, in a note, to the precise time, namely at a concourse for the chair of operative surgery held in 1812, which would make the period of writing the memoir to be, as we have stated it, in 1825.

In prosecuting his inquiries into the mortality of stone operations, M. Dupuytren takes occasion to notice, and therefore to reprehend, the quackish statements of Raw on the subject of his success; and to show, that, independently of other considerations, to operate 1647 times without losing one patient, which Raw said he did, was impossible, on the common chances of mortality operating on any such number, during the month that they must have been under cure. That Raw's statement was utterly unworthy of credit there can be no doubt; but it is singular that M. Dupuytren, with most others who have adverted to his braggartism, should have trusted only to internal evidence for the refutation of his assertions, and have entirely overlooked the documentary proofs existing at Amsterdam, of his bare-faced mendacity. For by a register kept at the College of Surgeons by order of the magistrates, of the operations performed by Raw at Amsterdam, and quoted by Camper in his *Demonstrationes Anatomico-Pathologicæ*, * it appears, that of 22, the whole number operated upon at that place, he lost four, which is at the rate of 1 in 5½.

The various accounts of success which are found in different authors, induced the Baron to collect an account of all the operations of lithotomy performed at Paris, both in public and private, during a period of ten years, and from this he deduced the inference, which he is disposed to consider as generally applicable in our climates, that not fewer than between a fifth and sixth of the whole number operated upon perish. We annex the table which contains the details of this information.

Sex.	*No.*	*Period of Life.*		*Died.*	*Cured.*	*Proportion of deaths.*		
Males.	97	3 to 15		9	88	1 in	11	9 in 100
	59	15	30	8	51	1	7	13½
	45	30	60	10	35	1 bet. 4 and 5		22
	74	50	70	18	56	1 in	4	24
	37	70	90	11	26	1 bet. 3 and 4		29½

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* Diarium igitur, quod jussû magistratûs in collegio chirurgico de sectis ex calculo servatur, adii, atque ex duobus supra viginti, quos Amstelœdami secuit, quatuor mortuos fuisse comperi.—Lib. secundus, p. 14.

Females.	7	3	15	0	7	0 0		
	11	15	50	10	10	1 in 11	9	100
	17	50	70	2	15	1 bet. 8 and 9	12	
	9	70	90	2	7	1 3 4	12	
Total,	356	3 to 90		61	295	1 in 6	17	
Males,	312	3 to 90		56	256	1 bet. 5 and 6	18	
Females,	44	3 to 90		5	39	1 in 9	11½	

We are informed by the author, that M. Sanson, one of the editors of this work, had commenced a series of inquiries relative to the mortality of the operation of lithotomy in the different hospitals of Paris, which had not, however, been terminated at the time he wrote.

We are surprised, however, that a period of more than eleven years should not have sufficed to procure the information which he was desirous of obtaining, and which would have been particularly desirable as an object of comparison with that now brought forward by Baron Dupuytren. M. Sanson's inquiries, indeed, as far as they went, seemed to indicate even a larger mortality from the lateral operation, than that deducible from M. Dupuytren's table; but the latter, it is to be observed, though it may be presumed to consist of lateral operations, principally, comprehended, we are informed, other modes of operating, and therefore could not be satisfactorily compared with the results of the lateral operation alone.

In considering the afflictive results of the table of mortality which he framed, the author feelingly inquires, whether, amid the more favourable issue of many of the most serious operations of surgery, four or five chances of success in five or six lithotomy cases are all that the utmost efforts of art can arrive at in this operation. To prepare for answering this question, he goes on to consider the circumstances which render the operation of lithotomy dangerous. Of these he refers about three-fifths (or 60 per cent.) to inflammation in different forms, and variously produced; about one-fourth (or 25 per cent.) to hæmorrhage, or its consequences; and the remainder (being 15 per cent.) to concomitant or accidental diseases.

Large incisions may give rise to *inflammation* by passing the limits of the neck of the bladder, and of the prostate, and thus allowing the urine to escape into the neighbouring cellular texture. Small ones, on the other hand, produce a necessity for more mechanical violence in the management of the instruments, and in the extraction of the calculus, than is compatible with safety. Inflammation may attack the bladder itself, or the surrounding cellular tissue; the rectum; the small intestines and stomach; the peritoneum, and the kidney. When more distant organs, as the lungs, the pleura, or the liver, are affected, the inflammation must be regarded either as sympathetic, and produced by the reaction of organs primitively affected, on the rest of the animal economy, or as the result of fever, which, acting on parts disposed to inflammation, develope this latter frequently of a severe and dangerous character.

Hemorrhage, the next source of danger, arises from wounds in some of the numerous vessels which come within the reach of the operation; but in addition to the perils arising from those two sources, and the others already alluded to, may be regarded the shock produced by the operation. In all cases, however, the danger seems to be much in the ratio of the length, difficulty, and pain of the latter.

In considering the best methods of diminishing the danger of the operation of lithotomy, (which forms the subject of the second section,) it appeared to the author, that if the incision of the parts, and above all, the extraction of the stone, could be rendered more prompt, more easy, and less painful, the chances of inflammation would be diminished; and that hemorrhage would be avoided, by carrying the instruments further from the trunks of the neighbouring vessels. In order to devise some mode of accomplishing these objects he made many observations on the dead body, relative to the various modes of approach to the bladder; but several of these he soon put aside as inappropriate and disadvantageous; and among those were an incision between the pubes and the neck of the bladder; an incision below the neck of the bladder, avoiding both its neck and the rectum; and the method of Foubert and Thomas, to aim at reaching the body of the bladder through the sides of its neck. In the latter mode of operating, there is, however, a great liability to wound the neighbouring arteries, and all of them have the inconvenience of being far from the urethra, and therefore incapable of receiving the important assistance derivable from the staff. The other modes of getting into the bladder are comprised in incisions made into it forwards, backwards, across, on one side and the other, and in positions intermediate. The author mentions having for sometime practised making an opening into the neck of the bladder forward, "that is to say, towards the symphysis of the pubis, dividing the bulb of the urethra, and the transverse arteries which belong to it; the membranous part of the urethra, the upper part of the prostate, and the venous plexus and cellular tissue, which surround the neck of the bladder." He soon, however, relinquished this operation, which he erroneously represents as being that which was recommended by Dr John Thomson;* and then notices, rather as objects of speculation, than with any practical view, some of the other schemes of improvement which have been devised.

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* It is singular how completely Dr John Thomson's plan of operation is misunderstood, and misrepresented, though he says, expressly in his account of it, (Edin.

The consideration of lateral incisions leads him again to advert to the disadvantages of the usual lateral operation, which, in addition to what has already been observed on the subject, is limited in the space afforded for the extraction of the stone, by the distance between the point wounded, and the circumference to which such wound is directed. Hence there occurred to him the idea of a *double incision*, such as Louis originally practised in women, which, by means of an opening into the neck of the bladder in two points at once, would augment the dimensions of the opening made into the cavity of that organ, make the extraction of the stone more easy, and avoid the disadvantages arising from carrying the incisions too far on one side.

In prosecuting this idea, Baron Dupuytren took into minute consideration all the particular points in which the double incision can be practised; and at length fixed on making an incision on both sides, similar to that practised in the lateral operation on the left. After having operated several times in this way, he was induced to suspend any further prosecution of the bilateral operation, as this was designated, from being much struck with the promptitude, facility, and safety of an operation by the rectum, which M. Sanson at this time adopted. This operation consisted in introducing a grooved staff into the bladder, and keeping it straight on the median line of the perinæum; the fore-finger of the left hand being introduced into the rectum, with the palm forwards. A bistoury was conducted along the finger, and its edge being directed towards the pubis, an incision of about an inch in length was made by it, through the *sphincter ani*, and the anterior parietes of the rectum. The membranous part of the urethra was then opened, and the bistoury being directed from before backwards, in the groove of the staff, opened the neck of the bladder and the prostate in the inferior part, to an extent corresponding with the supposed dimensions of the calculus. Baron Dupuytren operated ten or twelve times in this way, and was of opinion that the mortality was reduced by this operation to about one in eight. But though he continued to think well of this operation, the inconveniences with which it was occasionally attended, from urethro-rectal fistulas, induced him to regard it desirable to resume the consideration and cultivation of the bilateral method of operating.

Med. Surg. Journ. Vol. iv. p. 502.) that the external incisions, and the division of the membranous part of the urethra, are to be conducted in the usual way, which is certainly not by previously dividing the bulbous part of the urethra.

Before he enters on the particular description of this operation, a section (the third) is employed in giving an anatomical sketch of the posterior region of the perinæum, which is illustrated by engravings. It is not necessary to enter into an examination of a piece of well known anatomical structure; but we may remark, that, in treating of the dilatability of the urethra, he notices the advantages which this affords in allowing the passage of sounds of large sise, and even of double the original magnitude. When the expansion, however, goes beyond five lines in diameter, there is a danger of the parietes of the urethra being torn, and thus an infiltration of urine permitted.

The fourth section is devoted to a particular account of the operation. The object in view is, first, to cut through the integuments, the superficial muscular and aponeurotic layers to the urethra, then to open this canal to a sufficient extent, and afterwards to divide the neck of the bladder and the prostate gland laterally on each side.

But to effect these objects most fitly, some modification of the usual instruments is necessary, which he describes previously to giving a particular account of his mode of operating.

The staffs which are in common use are too small; are too much curved; are carried too far beyond the curvature; and have their grooves made too shallow. Those which Dupuytren employed were thicker, were more regularly but not so much curved; were a little enlarged for about two inches at the centre of the curvature; were rounded at the extremity like an olive, so as to enter into the urethra readily; had a deeper groove, which went the whole length of the instrument, and had an ebony handle, which was roughened so as the better to preserve a hold of it. The scalpel was two-edged, and rounded towards the point.

For the purpose of making the incision into the bladder, the lithotome caché of Frere Come would have sufficed; but then it would have been necessary to introduce it twice, which would have lengthened the operation, and, in particular, have interfered with giving to the whole opening "a perfect symmetry and an equal extent on both sides." A double lithotome, slightly curved, was therefore devised, having a single handle and two blades, shut up in lateral grooves in the stalk, which were made to open in a direction and to an extent fixed by a scale, and so as to cut through the neck of the bladder and the prostate, with two diverging incisions.

In concluding the operation, the patient is placed as for the common lateral mode of operating. The staff is introduced, and the calculus being discovered, its stalk is made to assume a right angle with the axis of the patient's body, and the concavity raised well under the *symphysis pubis*, and kept steady by an able assistant. With the two-edged bistoury, the surgeon then makes a curved transverse incision in the perinæum, having the anus in its concavity, and cutting across the raphé, about six lines anterior to that opening. The skin, the elastic subcutaneous cellular tissue, the superficial perinæal aponeurosis, the anterior point of the external *sphincter ani*, and the posterior part of the bulb of the urethra, are to be successively divided to the same extent, till the staff and its groove can be distinctly felt. In order to avoid the rectum, the incision is to be carefully made in the direction of a line extending from the anus to the anterior surface of the bladder; and the lower portion of the urethra is to be cut through so as to open out the groove of the staff to the extent of three or four lines. This is the first stage of the operation.

The nail of the fore-finger of the left hand is then to be introduced into the groove of the staff, as a director to the lithotome, and the latter is to be fairly lodged in the groove. The operator must now take the staff in his left hand, and push in the lithotome with his right, just as in the manner of the gorget, till it reach the bladder, which will be known by the flow of urine. The staff is then to be withdrawn, which terminates the second stage of the operation.

The lithotome is next to be turned, so as to have its concavity downwards, and is to be used as a staff, to explore the position and magnitude of the calculus. The blades must then be opened to such an extent as the operator, judging by the scale, may deem proper, and the instrument drawn gradually out, depressing the handle towards the anus, so as the more effectually to avoid the rectum; and thus two diverging incisions are made into the bladder through its neck, and a portion of the prostate gland, one on each side, obliquely from above, downwards and backwards. The forefinger of the left hand must then be introduced into the bladder, to ascertain the state of the parts, and upon it the forceps, by means of which the calculus is to be removed in the usual way. The largeness of the opening affords a ready means of using injections, to bring away broken portions; while the forceps can be introduced again and again, if necessary, without difficulty.

Having given these details as to the mode of performing the bilateral operation, which it is said are sufficient to show the superiority of the new mode of operating over that which has hitherto united the majority of suffrages in its favour, we have next in the fifth section of the work, an examination of this operation in a historical and practical view. The author considers the bilateral operation as bearing a close resemblance to the operation described by Celsus, in which a semilunar incision is directed to be made near the anus, and carried to the neck of the bladder, with the horns looking towards the hips;—"incidi super vesicæ cervicem, juxta anum cutis plaga lunata usque ad cervicem vesicæ debet, cornibus ad coxas spectantibus paulum." But then both the Baron Dupuytren, and the authors of the article *Cystotomie* in the Dictionnaire de Médécine et de Chirurgie Pratiques, Tom. vi. of whom the Baron was one, appear to have been puzzled with regard to the further part of the operation. This consisted in making a *transverse* incision into the neck of the bladder at the lowest part of the wound first made: "deinde ea parte, qua resima plaga est, etiamnum sub cute *altera transversa plaga* facienda est, qua cervix aperiatur." But in the present work the word *transversa* is altogether omitted; "etiamnum sub cute *altera plaga* facienda, &c." being the expression employed; while in the Dictionnaire above alluded to, though the sentence is not given in the original, yet it is stated (p. 86) that having reached the neck of the bladder, "il incise les tissus les plus profonds selon une *ligne droite* et decouvre la pierre;" and this, which is afterwards spoken of as an "incision droite," is, in the same page, mentioned as resembling the one made in the usual lateral operation, though evidently intended to correspond with the *lunated* wound, which constitutes so much resemblance between the operation of Celsus and that adopted by Dupuytren. We must own that we are surprised at so much want of precision when accuracy is so readily obtained.*

With regard to the comparative advantages of the bilateral and of the other modes of operating, the former is stated as being more easy, prompt, sure, and direct; as affording a larger opening for the removal of the calculus; as not cutting through the whole, but only a portion of the prostate; as keeping clear of the seminal ducts; as avoiding the great vessels; and as being equally applicable to both sexes, and to all ages and magnitudes of stone.

But the proper test is the experimental one; and to an examination of this, and the detail of some cases, the sixth and last section of the work is devoted. By a tabular view which is given of the success of the bilateral operation it appears, that of 42 cases operated upon by Baron Dupuytren (which included 4 females, who all did well,) 9 died, or 1 in $4\frac{2}{3}$; but if the males alone are taken, 1 in $4\frac{1}{4}$. Of 13 males operated on by M. Sanson the elder, 4 died, or 1 in $3\frac{2}{3}$; and of the whole number, amounting to 89, operated on by these and other surgeons, of which 4 as above were females, 19 died, or 1 in $4\frac{2}{3}$, and reckoning the males only 1 in $4\frac{1}{2}$.

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* We quote from the Glasgow edition of 1766, p. 346; and from Dr Milligan's, p. 383; and from that of Almeloveen, Amst. 1687, p. 477.

In a note appended to this section it is stated that the success was at first much more considerable; for of 70 cases operated upon at the Hotel Dieu, or in other parts of Paris, 6 only died; while at the Hotel Dieu itself 26 operations occurred in succession, without one death. This statement, we are informed, was first made public in the sixth volume of the Dictionnaire de Médecine et Chirurgie Pratique, to which we have had occasion to allude; but the documents from which it was derived are not now, we are told, to be found. At this circumstance we are not a little surprised; for we were disposed, as far as public institutions were concerned, to give all the great Parisian Hospitals the credit of keeping a correct registry of the result of the great operations performed in them. It does not appear, therefore, from the results of M. Dupuytren's experience, or that of other Paris surgeons, since the year 1831, when the first statement was made, that there is much encouragement to persevere in the bilateral operation, since the mortality which attends it is a good deal more than that of the lateral operation at Paris, and greatly exceeds that of the average of hospital surgeons in this country.

If this splendid volume had been published when there was so much success to recommend the practice which it describes, its appearance would unquestionably have been more appropriate than under the present discouraging circumstances. It would likewise have conferred on the profession the important benefit of laying open an entirely new field of practical enterprise. But as all the principal observations which this volume contains were published six years ago, in the volume of the Dictionnaire de Médecine et de Chirurgie Pratique, to which we have already referred, the interest which attaches to the present publication is necessarily to a certain extent diminished. Still, however, as it was a favourite object with one of the most distinguished of our European surgeons that his operation should be presented to the public in the most illustrative and creditable form, we have flattered ourselves that it would be acceptable to our readers to devote a larger space to the examination of this work, which is equally distinguished for the beauty of its letter-press, and for the admirable execution and correctness of its plates, than we should have otherwise deemed necessary.

It may be proper to state, that though the author at length decided on cutting into the bladder through the means of the double cystotome, his first trials were made with the scalpel. His accurate knowledge of the anatomy of the parts, enabled him to effect his double incision with this instrument, with facility and success; and we think that no one is justified in attempting to operate, either with gorget or lithotome, single or double, without having anatomical knowledge sufficient securely to work his way into the bladder by means of the scalpel alone.

We shall terminate this article by giving a slight sketch of some cases in which the bilateral operation was performed, either by the Baron Dupuytren or others.

The first is that of a man of 66, from whom one calculus of above two ounces in weight, and another of more than an ounce, were removed. Hiccup came on the second day, with much exhaustion; on the fourth the hiccup ceased, and some blood began to colour the urine, which increased in quantity, and on the ninth the man died. As but little blood came away during the operation. twenty leeches were applied, the same evening, on the hypogastrium by way of precaution; a procedure of which we very much doubt the propriety in a subject so debilitated as this is represented to have been.

In the second case, where two small oxalate of lime calculi were removed, fever came on, and the patient, a man of 45, gradually sank, and died in fourteen days after the operation.

Several calculi were discovered in the prostate gland after death, which are mentioned as having consisted of *xanthic oxide.* Prostatic calculi, however, have been hitherto found by Dr Wollaston, and our best philosophical chemists, to be composed entirely of phosphate of lime; and as, besides this circumstance, xanthic oxide is exceedingly rare, we are inclined to doubt the accuracy of the statement, unless it has been the result of a very careful and expert analysis. Two more unsuccessful cases are narrated; one of a man of 71, where there were several calculi, and mucous urine: the other, where the perinæum was so exceedingly deep, as that the double lithotome could not pass so far as to be developed, and to cut through the gland in the ordinary way. A bistoury with a long handle was therefore used, but there was much difficulty in its employment, as the finger could not reach so far as to direct its movements. At length, however, the incision was made, and the forceps introduced, by which seven smooth and polished calculi of the size of a filbert were removed. Fever and depression came on, and the man died on the fifth day after the operation. The nature and extent of the wound made at the neck of the bladder are not mentioned; but the bladder was found to form three cavities, the central having the ordinary appearance and magnitude of the bladder; and two lateral ones, each capable of holding a goose's egg, which communicated with the principal cavity on each side, by an opening which would admit the little finger, and was situated about an inch above the termination of the ureters. Both the lateral pouches contained some urine, but one of them likewise had in it seven calculi, similar in size and appearance to those which had been removed by the forceps.

Three cases of boys, of the respective ages of 10, 5, and 11, did well; and also two of adults, in each of which there was a recto-vesical fistula.

The subject of one of the last mentioned cases drew up a very interesting account, (which is given in his own words,) of several ineffectual attempts made by M. Civiale, to remove his calculus by lithotrity. There seems to have been here much culpable inattention to the state of the urethra previous to the introduction of the lithotritic apparatus. Had this been ascertained, and attempts made to prepare for such introduction by a gradual dilatation of the tube, there might have been some chance of success.

Art. III.—1. *Schilderung der Typhus-Epidemie (Typhus abdominalis) welche im Marz* 1834, *in der Konigl. Stadt Brüx geherrscht hat.* Von D. F. Ign. Killiches, Physik daselbest Medezinisch Jahrbuch des R. K. Osterr.—*Delineation of the Epidemic Typhus which prevailed in the town of Brux (in Bohemia) in March* 1834. By Dr F. Ign. Killiches.

2. *Typhus intestinalis ulcerosus oder Enteropyosis Typhosa. Vorvort, von C. W. Hufeland.* [*Journal der Practischen Heilkunde.* Von C. W. Hufeland und E. Osann. 1835. lxxx. Band. i. St. ii. Seite 32.]

1. *Die nachtheiligen, ja oft todtlichen Folgen, wenn ein Typhus abdominalis inflammatorius, wie ein gewohnliches Nerven fieber behandelt wird, durch zwei unglückliche Falle dargestellt.*

2. *Glücklicher Erfolg des Uebergangs von der gewohnlichen Kurart zu der des Typhus abdom. inflammator. bei einem epidemisch-gastrisch-nervösen Fieber, nach der Beobachtungen im Militair Hospital zu Dresden.* Von Bataillonsartzt Dr Frenzel.

Intestinal ulcerating Typhus, or Typhous Suppuration of the Intestines. Introduction by C. W. Hufeland.

1. *The detrimental and fatal consequences of treating inflammatory abdominal Typhus as an ordinary Nervous Fever, illustrated by two cases terminating fatally.*

2. *The favourable result of the transition from the usual mode of treatment to that of inflammatory abdominal Typhus, in an epidemic Gastric Nervous Fever. From observations made in the Military Hospital of Dresden by the Regimental Physician,* Dr Frenzel. *Hufeland's Journal,* lxxx. Band 1835. i. St.
3. *Ueber den Sectionsbefund bei den an Nervosen Fiebern Verstorbenen. Beobachtungen angestellt im Friedrickstädtischen Krankenhause zu Berlin wahrend des Jahres* 1834. Von Dr Stannius, Pract. arzte zu Berlin.—*On the appearances found in the bodies of persons dead of Nervous Fever. Observations made in the Frederickstadt Infirmary at Berlin during* 1834. By Dr Stannius. *Hufeland's Journal,* lxxx. Band ii. St. Feb. and iii. St. March.
4. *Ueber das Nerven fieber welches in summer* 1835, u. s. w. *On the Nervous Fever which prevailed in the summer of* 1835 *in the Imperial Grenadier Regiment, with observations on Abdominal Typhus.* By the Regimental Physician, Dr Grossheim (Read to the Medico-Chirurgical Society of Berlin on the 11th March 1836.) *Hufeland's Journal,* lxxxii. Band 1836. iv. St. April.
5. *Beobachtungen und Erfahrungen ueber den Typhus gangliaris, s. abdominalis, s. entericus,* u. s. w. *Observations and Researches on the Gangliar or Abdominal or Enteric Typhus which prevailed at Stangenrod in the years* 1833–34. By Dr Ebel, Physician at Grunberg, in the Grand Duchy of Hesse. *Hufeland's Journal,* lxxxii. Band 1836. vi. St. Iunius.

The subject of Abdominal Typhus, or fever with abdominal disorder or affection of the intestinal mucous membrane and follicles, has engrossed so much of the attention of foreign physicians, that it becomes requisite to bestow some separate consideration on the facts and opinions adduced during the last two or three years. It may perhaps be remembered, that the earliest essay on this subject, also by a foreign physician, viz. Dr Autenreith appeared in the 18th volume of this Journal in the year 1822. And the views therein adduced derived some importance as well as interest from the circumstance, that the author of the account had also been himself the subject of the disease. Since that time, numerous detached observations and various essays on the subject have appeared in different parts of the continent; and did our limits permit, it might be an occupation not altogether void of interest, to trace in the writings of the different observers the history of the progressive literature of this disease. Such an undertaking, however, our present limits will not allow; and what we propose at present to do, is merely to direct the attention of our readers to several of the most important of the publications which have, during the last few years, expressly or incidentally, been devoted to this subject.

I. In the first paper we find an interesting account of a typhous epidemic which prevailed in Brux, a pleasant town of Bohemia, situate on a gentle eminence of the Schlossberg, with a lake on the north-west, and not far from the Biela, one of the tributary streams of the Elbe, and which, at its junction with that river, often causes inundations, as was the case in November 1833, when the water, which covered the meadows above and below Brux, made an actual lake, which did not subside till after the middle of February 1834.

The endemic diseases of this place are pectoral disorders, catarrhal and rheumatic affections, and in moist seasons, agues. During the first four months of 1834, the disorders presented a gastric inflammatory character; but in February the inflammatory catarrhal was the most predominant; and the antiphlogistie treatment was in general indicated and beneficial. At the close of February was first developed that morbid character of the popular sickliness which in March betrayed an intense degree of violence. The disease presented at first symptoms of inflammatory disorder of the stomach and intestinal tube, in which the mucous membrane of the stomach and intestinal canal seemed principally to suffer. As almost all those attacked were strong-beer drinkers, and as no local affection of the brain or chest was present, the circumstance attracted little attention. But in the beginning of March, there daily sickened several under the same symptoms of affection of the alimentary canal, and there appeared in several cases also symptoms of disorder of the brain. On the 8th of March, the character of the disease was unequivocally declared; on the 18th, the epidemic had attained its point of culmination; on the 21st, it was almost extinct, since from this time there appeared inflammatory fevers with local affections and gastric fevers; but there were no more attacks; and the popular sickness resumed its catarrhal character, which prevailed during the month of April, and required antiphlogistic measures.

The author mentions as a circumstance deserving attention, that the disease selected for its seat the upper parts of the town, and chose its victims without distinction of age, sex, and mode of life, while in the parts lying down on the Biela, and in the suburbs, few patients sickened, and the whole environs remained healthy. Other acute diseases ceased to appear in the first twenty days of March, and chronic disorders took the character of the epidemic. In many houses one person sickened; in others two or three; in one family seven, and, indeed, all at the same time. If three or four days after the first cases no one was sick or unwell, all the other members of the family remained sound. The total number of cases, in a population of 2905 souls in the town, and of 58 boys in the school, and four common servants in the boarding-house of the Wellington infantry regiment, amounted to 193, of whom 165 recovered, and 28 died, the last case on the 9th of April. Among those attacked in the town were 66 children, the youngest two years old.

The leading symptoms of the disease were the following. Inability to maintain the erect position; giddiness, especially in sitting up, sleeplessness, or disturbed sleep in the early part of the night; anxious restlessness, or stupidity, indifference to surrounding objects; dull headach, more or less paleness of complexion; weak lacrymating eyes, and dulness of hearing or deafness; great thirst, complete anorexia, nausea, and vomiting; the lips dry and coated with thin yellow brown crusts; the tongue generally white at the edges, in the middle yellow and thickly coated; the taste slimy, bitter, or sour; the thoracic organs unaffected; but a disagreeable painful sensation in the epigastric region, which extended to the loins. The abdomen was distended and inflated, but not tense, soft; often hot and painful on pressure; the bowels slow, the urine scanty, and of a deep red. The skin was dry, often burning hot, in a few cases covered with a clammy sweat and void of eruption. The pulse varied from 100 to 180, and was small and hard.

As the course of the symptoms proceeded under negligent treatment, on the third or fourth to the ninth day, never later, the form of the disease was changed. The half of the cases presented symptoms of inflammatory disorder of the brain, indicated by more or less disturbance of the intellectual powers, with furious delirium, often mania, or great torpor with blackening of the nostrils, lips, and teeth, and difficult deglutition. The abdominal uneasiness then disappeared either entirely and without recurring, at the onset of the cerebral disorder, or was again aggravated on the remission of the headach, or with this continued in similar violence. Then came loose watery stools, with an offensive smell, yet without pain. No eruption appeared, although the epidermis in convalescence always desquamated in small scales. Epistaxis, which frequently ensued at the commencement of the crisis, afforded relief.

On the 4th, 7th, or 11th days of its presence, the violence of the headach progressively abated; but dull pain and deafness continued long. The more early this recurrence took place, the more violent was the abdominal affection; and the later it occurred, the more certain was their recovery. In general, on some day from the 14th to the 17th, there arose a profuse discharge of mucus from the nose and mouth, a copious sour-smelling perspiration, and urine with a brick dust sediment, and then lastly convalescence. Repeated alternation between the cerebral and abdominal symptoms was not observed. Pectoral disorder was in this epidemic rare, to an exception; and then the head remained free from inflammatory symptoms. This pectoral disorder was partly spasmodic, partly congestive. In the last two cases the belly was very painful and sensible, and constipation and diarrhœa alternated, while torpor was considerable. In both cases death ensued, and it was preceded, after great anxiety and restlessness, with a comatose state with partial convulsions.

In several cases the thoracic affection abated from the 15th to the 17th day, while the nervous continued to the end of the 4th week, when recovery progressively ensued.

But the most of those who sickened from the 8th to the 20th of March, and those in whom the cephalic or pectoral symptoms after a few days disappeared, continued to suffer almost exclusively under abdominal disorder. In these the torpor was predominant, and the typhous condition was clearly indicated. The tongue was at first moist, afterwards dry, often of a bright red, and, as well as the lips, teeth, and nose, covered with a black crust; and the drying of the mucous membrane extended deep into the pharynx with uniform tremulousness of the organ. Crisis never took place before the 17th or 21st day; but this was always accompanied by cough, not hitherto recognized, often very violent, and which was at first dry, short and painful, but in the course of the 4th day became moist, and detached the whole mucous crust with relief to the symptoms. The belly then became soft and free from morbid sensibility; the excrements, which previously were yellow and fluid, had in many a peculiar, white, cheese-like or greenish colour; and the epidermis began to desquamate. Patients in whom the pain in the stomach disappeared after an emetic taken at the commencement, lay notwithstanding, without any local symptom being manifested, deaf, sleepless and raving, with similar though abating symptoms to the 14th or even the 20th day, when, after general sweating, recovery took place. All those who sickened after the 20th March were attacked only in a very slight form; and the later indeed the more gently; and all recovered in the space of from seven to eleven days.

To the subject of morbid anatomy, pathology, and treatment, we shall afterwards advert. In the meantime we propose to proceed with the semiographic sketches furnished in the other papers.

II. The second article in our list, which is prefaced by some preliminary observations by Hufeland himself, is the work of a physician who is unwilling to give his name, and is chiefly intended to impress the detrimental and occasionally the fatal consequences of treating abdominal typhus as an ordinary nervous fever, that is without adequate depletion; and with the view of enforcing more fully the truth of the views of the author, he details the cases of two beloved sons who fell victims, he conceives, to the stimulating method, and the neglect of the use of antiphlogistic measures. These young persons, it seems, were attacked about the middle of November 1833, with symptoms which were regarded as indicative of the presence of nervous fever; and the treatment consisted in the first case of emetics, diaphoretics, a blister to the nape of the neck, infusion of rhubarb to check diarrhœa, then infusion of ipecacuan with diaphoretics, warm applications over the belly, mucilaginous glysters, and lastly, Peruvian bark with valerian; and in the second case, infusion of valerian with camphor, and the one-tenth of a grain of tartrate of antimony every second hour. Both terminated fatally; and in the dissection of the first, besides the usual appearances of redness of the cerebral membranes, subarachnoid and intra-cerebral serous fluid, bloody gorging of the lungs and spleen, and in the lower third of the ileum, the mucous membrane occupied with many fungoid ulcers, at an average as large as pease. The total duration of the disease appears in this case to have been about thirty-six or forty days. He had been ill already some time on the 23d November, when first visited, and he died on the 14th December.

In the second case no dissection seems to have been performed.

III. In the third paper, a regimental physician, Dr Frenzel, offers some judicious observations on the favourable consequences of the transition from the usual mode of treatment to that required for inflammatory abdominal typhus, in an epidemic gastric nervous fever,—according to some observations made in the Military Hospital at Dresden.

It appears that in this town, after the prevalence of the influenza in the spring and summer of 1834, gastric fever appeared in the last quarter of the year; that is to say, fever with gastric disorder, in which the pulse was always somewhat tense and hard. This state of the pulse, which was generally accompanied with delirium, was attributed to inflammatory irritation of the cerebral membranes; and consequently blood-letting was employed, sinapisms were applied, and cooling, resolving, evacuating remedies were administered; and under these means some slight cases recovered, while in one of the same order, the morbid state was long protracted, and the patient at the end of the seventh week sunk under a generally diffused putrescence. Almost at the same time died three other patients, all of whom suffered for a long time under diarrhœa, and were brought to the hospital as patients labouring under gastric nervous fever. The morbid phenomena were livid collapsed countenance, with brown-yellow circumscribed cheeks, foul, turbid vascular conjunctiva, affection of the head from simple giddiness to delirium, dry chopped lips, dry chopped, foul, loaded hot tongue, half-red at the *apex*, *anorexia*, foul vitiated taste in the mouth, longing after cold drinks, distended though soft belly, diarrhœa with or without tenesmus, and hot dry skin. The sensibility of the abdomen round the navel on deep pressure, and the tense, hard, and frequent pulse denoted a slight erethistic condition in this region. In two of these cases in which blood-letting was performed, the blood was abundant in coagulum, but without buffy coat. But the result was sudden sinking of the strength, coldness of the whole body, with cold clammy sweat, blueness of the extremities, low delirium, floccitation, small rapid pulse, retching, discharge of fœtid stools, and death speedily after.

The third patient, in whom the inflammatory irritation of the vascular system was less remarkable, was treated on the antigastric and antinervous method, and died amidst similar phenomena, and with like rapidity within three days, as his predecessors. Of the appearances found in the dead body in these three cases, Dr Frenzel gives an account, which, as they present something peculiar, may be here introduced, though not in the proper order.

The *ileum* and *caecum* presented on their outer surface inflammatory redness; the mesenteric veins were filled with dark-coloured blood, and the mesenteric glands enlarged. The mucous membrane of the whole alimentary canal was morbidly softened, the vessels preternaturally conspicuous; and on the ileum were actual ulcers, not from ulceration of the follicles. In the middle of the *jejunum*, the glands of Lieberkuhn and Peyer began to be strongly marked; while those in the *ileum*, especially its inferior portion, and also in the cæcum, were degenerated to actual carcinomatous ulcers, with lardaceous surface, and thick, swelled, jagged edges. The intermediate degree of disorganization between incipient enlargement and final ulceration of the glands threw some light on the developement of the disease. Glands of the size of the head of a needle were still concealed in the mucous membrane; yet in the latter the termination of the first was manifestly to be observed. The larger the degenerated gland projecting from the mucous membrane was, the greater part took the mucous membrane in this degeneration, so that where the process had advanced to the actual formation of ulcers, the ulcerated glands were seen surrounded by swelled spungy edges formed from the mucous membrane. In this change, the muscular coat of the bowel performed no part, though the mucous membrane was easily detached from it. Similar changes to those of the isolated follicles of Lieberkuhn, the aggregated glands of Peyer underwent. In the advancing enlargement the Kerckringian *plicae* were stretched, so that the elevated parts in the intestine indicated their presence through their smooth surface. Wherever the process had already advanced to the formation of ulcers, there was evidently the ulcer corresponding to the circumference of the small follicular patch,—attaining a size of from one to three inches and a half, and a breadth of from half an inch to an inch and a half. The largest ulcers were at the entrance of the ileum into the cæcum. The whole portal system was surcharged with dark-coloured, thick, semifluid blood; the liver was enlarged; and the spleen was enlarged and much softened. The kidneys were congested with blood; and in the pelvis were always found some drops of puriform mucus. The urinary bladder was empty.

The changes in the thoracic organs were in every case dependent on previous inflammatory disorders, not connected with the present disease. Accumulation of blood in the lungs was uniform.

In the cavities of the brain the collection of serum was greater than is usually found in dead bodies.

From the facts thus disclosed by inspection, Dr Frenzel thinks, that the fundamental lesion in this disease consists in inflammation and ulceration of the intestinal mucous membrane, and particularly inflammation and ulceration of the follicles seated in it. The origin of the disease he ascribes to epidemic influence, by which probably the breathing process is first deranged, the accumulation of carbonaceous matter in the blood is favoured, or its separation by the lungs is prevented; and the body speedily becomes the seat of a venous state, which disposes to the formation of adynamic fever, so that only a slight external occasional cause is required to induce, according to the difference of the other concurrent circumstances, sometimes a simple gastric fever, sometimes a gastric venous, gastric nervous or putrid fever, sometimes a lymphatic venous inflammation, and consequent ulceration of the mucous membrane of the intestinal canal.

The first stage of the disease, when the trifling pain in the abdomen, and particularly in the right iliac region, not observed by patients, with the other slight febrile symptoms, are taken at most for the effect of slight cold, usually passes unprofitably to the physician. It is only when the disease approaches the second stage, when the symptoms of sympathetic affection of the brain appear manifest, and the general debility is greater, that medical assistance is requested. At this time, with the general gastric nervous phenomena, are combined the greater or less sensibility of the abdomen, especially under the navel, and in the right iliac region, the thin watery discharges mixed with mucous flocculi, and sometimes bloody, the loaded tongue, the great longing for cold drinks, and lastly, the tense hard pulse, —all of which compel the physician to observe that he has not before him an ordinary gastric nervous fever, requiring the employment of nervine remedies only. Convinced by the phenomena found in the dead body, that all the symptoms taking place during life must be referred to inflammation of the mucous membrane of the alimentary canal, and that, as the predisponent agent to this must be recognized, a surcharged state of the abdominal vessels, with carbonaceous venous blood, Dr Frenzel determined in subsequent cases, with regard to the individuality of the patients, to employ a depletory, antiphlogistic, and at the same time soothing method of treatment.

IV. Of all the accounts, however, now before us, the most complete and the most satisfactory is unquestionably that by Dr Grossheim, who describes the disease with great accuracy and fidelity as it took place in the Imperial Grenadier Regiment in the summer of 1835.

In the latter half of the month of May of that year, the 5th and 6th companies of that regiment, consisting of about 306 men in strength, presented several cases of sickness, which at first seemed to belong to a catarrhal gastric fever, with diarrhœa. These being ascribed to the effect of military exercises in a changeable season, with the night bivouac in the open air, at first attracted little attention, especially as gastric catarrhal fever was at this time more frequent than at other seasons. When, however, the number of individuals attacked by this disease, within a short time, augmented in an unwonted degree, in the course of the disease the symptoms of the disorder known under the name of abdominal typhus were developed, and the termination of the disease was often fatal, attention was urgently directed to this disorder, though unimportant in its commencement. Special examination of all the individuals of both companies in the beginning of June, showed that about 40 were labouring under the same symptoms which the previous dangerous cases had presented. Those in whom the symptoms were most conspicuous were admitted into the lazaretto, and the others remained under medical inspection in the barracks. But, notwithstanding skilful medical treatment, it was impossible to prevent the disease from making progress to its advanced stage in many individuals of both classes, and terminating in different results, sometimes slightly, sometimes dangerously, sometimes fatally.

The sickening also was not confined to the individuals first attacked; but afterwards spread to many others, so that two or three new cases took place daily. To the 20th of June scarcely any diminution in the frequency of the cases could be observed, though, from the commencement of the unwonted sickness and mortality, the troops had been placed under such strict management as to diet and regimen, that it might be certainly known that none of those causes which had given birth to this violent disorder were allowed to operate. At the close of June and in July, the new cases became daily fewer, and when they occurred, they proved slighter than at the commencement. This was still more so in the month of August, and in the month of September, during the whole of which only two new cases occurred, the sickness might be regarded as extinct.

The whole number of persons affected by this fever in a corps of 306 men were as follows:—

From the 15th to 31st May,	7 cases.
1st to 30th June,	75
1st to 31st July,	22
1st to 31st August,	6
1st to 30th September,	2
	112

To demonstrate the frequency with which the disease prevailed in this specified time, Dr Grossheim mentions that, with the exception of 5 cases, which belonged to the 8th company, the whole residual 107 affected with abdominal typhus belonged to similar divisions of the 5th and 6th company, the total strength of both being 306 men. Of these the patients in abdominal typhus,

In May,	7, or 1 in	43.7
June,	75, or 1 in	4.0
July,	19, or 1 in	16.1
August,	5, or 1 in	61.2
September,	1, or 1 in	306.

The mortality and its relation to the different months may be estimated from the following statement:—

In May,	1 death.
June,	13
July,	3
August,	2
September,	1
	20

This gives a proportion of 1 in 5.6.

The course of the disease previous to its fatal termination, and the period at which it terminated fatally, may be understood from the following statement. Of the whole 20 fatal cases.

1 was ill	5 days.	2 were ill	18 days.
2	9	2	19
1	10	2	22
1	13	2	24
1	14	1	30
1	15	1	47
2	16	1	52

From this it results that, at an average, the duration of the disease extended little beyond twenty days.

Though Dr Grossheim disavows the intention of giving a description of the disease, yet he is led to give a minute account of its effects on the different textures and functions, chiefly to inquire whether the denomination by which it is designated, really expresses the meaning wished to be conveyed.

From his account, it resembles in many circumstances typhous fever as it occasionally, nay commonly, appears in this country. Thus it commences with the same feelings of cold in the back, amounting often to shivering, and followed by heat and pain in the limbs. It is attended with the same sensations of weakness, languor, and lassitude; the same giddiness, ringing in the ears, and tendency to faintness, which obliges the patient to seek the horizontal posture. The countenance loses its expression and becomes bloated; a lax inertia of the muscles of the face gives it a strange tranquillity; the eye is dull and void of lustre; the pupil is almost uniformly dilated, though in a few cases it retains its normal diameter, and individual enlarged vessels become manifest in the *conjunctiva.* The tint of the complexion is more dingy than usual, yet without circumscribed redness, livid, often of a brownish-red, and feebly glistening, as if covered with viscid sweat.

These symptoms, which are principally regarded as nervous, are successively followed by those which indicate the participation of the digestive function. The tongue, though in some perfectly clean, red and moist, is in the most part covered by a white or white yellow fur. This in a few cases uniformly covers the whole upper surface of the tongue. But more frequently it is concentrated towards the middle, where it appears divided as if by a deep sharp line; but most frequently of all the upper surface of the tongue shows itself changed in one of the two following modes. 1. The tongue is moist, and along the margins to the apex red, and a red streak extends from the apex backwards, and divides the white, white-yellowish, or white gray coating anteriorly in two halves, which, however, behind are united, or only parted by a sharp furrow. 2. The tongue may be moderately moist, and covered by a thin uniform discoloured coating, which disappears behind. On the whole surface are observed somewhat long vivid red spots of the size of millet seeds, which protrude through the fur without elevation. With this condition also is associated that first noticed, so that the two lateral broad streaks of the thick fur rest on the thin fur covering the whole lingual surface with red pointed spots.

The taste is either not changed, though anorexia and sometimes dislike to food, squeamishness and slight retchings ensue, —or the patient has a bitter taste in the mouth, and eructations of the same kind.

The thirst is often not more conspicuous than in health; but when it is considerable, it is chiefly for cold water; and when large quantities of this are drank, slight vomiting ensues. In many individuals difficulty of deglutition with swelling of the palatine *velum*, but without swelling of the tonsils, takes place.

The most important, however, and it is believed the most characteristic of the symptoms of this disorder, are said to be found in the state of the belly. At the commencement of the disease it is soft, and, according to the testimony of the patients, void of pain. But when the abdomen is carefully examined, it is possible to recognize even in this stage, sometimes in one spot, sometimes in another, some degree of morbid sensibility, and to distinguish and hear in these parts the gurgling motion of fluid intestinal contents. Most frequently this phenomenon is observed in the right iliac region, and between the navel and the pubal arch. More rarely the epigastric region is somewhat distended and painful on pressure. Increased heat in the abdominal integuments is not recognized.

The intestinal discharges are in extremely few cases temporarily stopped. In others they are natural; but in the majority watery diarrhœa with *borborygmi* is a leading symptom. The constipation and the normal state of the discharges never continue long; but after the course of a few days, often after the exhibition of aperient medicine or a glyster, after the discharge of solid excrements, watery diarrhœa ensues.

The urinary secretion is diminished, so that in twenty-four hours rarely more than one pound of urine is secreted, which is darker in colour and more turbid than healthy urine. The cutaneous secretion varies. In some, especially plethoric subjects, it is with the hot skin suppressed; in others moderate; and in others unequivocal perspiration more copious on the upper than in the lower parts of the body take place.

The pulse is never very rapid, and is generally between 80 and 90 beats in the minute. Rarely also is it full and hard, and it is so regular that it may be regarded as normal. In the very plethoric, it is full, strong hard, and rapid, and the carotids beat violently. Respiration, though somewhat laborious, remains regular, and the chest rises regularly when the lungs are not simultaneously diseased. The sleep is disturbed and interrupted by slight dreaming. Often the patient slumbers much especially in the day, but is easily roused, and recovers at the same time his consciousness.

The state now described continued in the patients treated by Dr Grossheim little changed for three days, in some instances longer. In cases which must be presumed to be least intense, medical treatment, particularly by energetic emetics, succeeded in cutting short the disorder and establishing convalescence. But in the more violent cases the disease proceeded to the second stage.

This was distinguished by increasing weakness, so great that the patient could not maintain the erect position, either on his feet or in bed without support, sense of weight in the head, increased feebleness, continued anorexia and thirst, some pain in epigastric region and that of the cæcum, (right iliac,) and indeed the whole right iliac region on pressure directed deep on the part, and reddening of the conjunctiva, with a dry slimy secretion at the angles of the eye. The appearance of the tongue also became more remarkable, the fur became dry and hard, presented a deep furrow along the median line, and generally transverse chops. The edges, however, continued red and frequently moist. In very violent forms of the disease at this stage, the teeth, lips, and gums were covered with a brown, dry, viscid crust. The protrusion of the tongue the patient had completely under the power of his will, and a certain degree of power in this action was evinced by the resistance which the finger of the physician encountered when pressed against the apex of the tongue.

The sensibility of the epigastric region seldom proceeded to the second stage of the disease, probably because the evacuating remedies employed had unloaded the intestines of the upper abdominal region of all the unusual accumulation of morbid matter. A certain degree of sensibility, however, was still perceptible in the region of the stomach, and it went on always increasing to the third stage. The sensibility of the region of the *cæcum* continued usually much longer; yet the patient felt this only when pressure was employed, or when he went to stool. Continuous diarrhœa of watery slimy matters with some tenesmus was never wanting at this period of the disease, and never ceased until a favourable change in the whole condition of the patient took place. The abdominal muscles were in a certain degree of tension, and the abdominal integuments felt dry and hot, while tympanitic distension of the bowels, especially below the navel, began.

The urine remained scanty; and its quality varied in different individuals. In those with the thickly coated dry tongue, the dry skin and moderate stupor, it was of a dirty reddish tint and very little turbid, without undergoing the slightest change after long standing in the vessel. In those with the tongue continuing red and dry, vivid redness of the face and rapid pulse, it appeared of a darker red or brown red, with frothy bells at the walls of the vessel, but otherwise it was clear and transparent, and underwent no change on standing. In a few cases from urine at first of normal aspect, there was separated a thick truly puriform precipitate, without, however, proving critical.

The skin continued dry, hot and harsh. Very often it desquamated in branny-like scales in particular regions, especially on the forehead, nose, and cheeks. The measle-like eruption, regarded by many as essential to this disease, was not observed in all patients. The spots were always detached, so that they might be apart from each other on an average about three-quarters of an inch. They continued unchanged for a week, and becoming gradually more faint disappeared on convalescence, without leaving further traces. A white miliary eruption was not a rare occurrence. It neither denoted peculiar malignancy in the attack, since many afterwards recovered, nor could it be accounted as critical, since it did not change the intensity of the symptoms. Petechial spots were often observed on the neck, the breast, and the arms; but neither from these could any peculiar semiotic inference be established.

The pulse continued in this stage moderately full, hard, quick, and frequently tense. Almost in none was wanting throbbing of the carotids more or less violent. The respiration, except in its being accompanied with sighing, was generally regular, and not laborious. In those cases in which the disease afterwards made still further progress, there were remarked at this stage slight rhonchus, a little stronger action of the *alæ nasi*, and sudden expiration of the air inspired with moderate calmness.

The patients lay for the most part very calmly, some on the back, others on the side, with the eyes shut, and apparently in tranquil sleep. When addressed, they were quickly roused, and answered without great difficulty. The hearing was of natural acuteness; in few deafness took place. The nocturnal sleep was often interrupted and not refreshing. The delirium was almost throughout of the mild character; in some, however, it was violent, with constant desire to get up, so that restraint became necessary.

From this stage the disease proceeded either to recovery or death, or to the third stage.

In the first case, the disease terminated either in crisis or in resolution. The critical termination took place mostly by the cutaneous and the urinary secretion; the former in no case profuse, the latter generally in increased quantities, sometimes watery and without deposit, sometimes with clouds and precipitate. In the case of termination by resolution, the most certain symptom was the return of appetite, and the gradual regular evacuation of the alvine excretions.

The termination in death at this stage of the disease was rare, and indeed among the whole number of deaths, two only occurred at this time. In both cases, it took place with unexpected rapidity, and suddenly after the patient had, a short time previously, without assistance, gone to stool. In both cases, the dead body showed, besides the changes peculiar to the disease, the traces of suffocation, excessive congestion of the right side of the heart, and polypous concretions in the same, and in the pulmonary artery, the lungs, dark-coloured and filled with frothy blood, and reddened mucus in the bronchial tubes.

When the disease was protracted to the third stage, the functions of the brain were more thoroughly disordered. The patient muttered with half shut eyes, but still so that when addressed he answered forthwith correctly. The eyes were still reddened, the face red, discoloured and collapsed, the tongue foul, brown, dry, could often not be protruded, but lay, though dry, yet loose, soft, and without muscular strength within the mouth. In a few cases of very great debility, it was manifest that the patient, at the request to show the tongue, drew it backwards with effort, and then first protruded it, when it was wished that he should withdraw it. Of these patients none recovered. Deglutition became in this stage difficult, partly on account of the drying of the tongue and the palate, and the margins of the tongue being covered with aphthous ulcers, partly because the muscles of deglutition began to lose their energy. The abdomen was strongly tympanitic and distended from the pelvic region to the epigastric, and thereby confined the respiration. The intestinal contents escaped without the will or consciousness of the patient, or when he was conscious of the stimulus, it overtook him, nevertheless, before he reached the night-table. The discharges were sometimes watery and slimy, sometimes bloody, dark-coloured, of a chocolate brown or gray.

The pulse, though little changed in frequency, became progressively softer and weaker, and though it retained in some cases a degree of hardness, it increased in rapidity, and became gradually small and vermicular. In one case only he observed, two days previous to death, with frequency not remarkable, an irregular intermitting pulse. As to breathing at this stage of the disease, the expiration was always more rapid than before, while the laborious inspirations were accompanied with increased violence in the action of the *alae nasi*. In cases in which prostration of the muscular strength was complete, *subsultus tendinum*, and tremulousness of the limbs took place; and the latter of these, in a patient who afterwards died, was several days as violent, as it is wont to be in the shivering fit of ague.

When the disease is so far advanced, the termination is more frequently fatal than in recovery. Death ensues either suddenly, and indeed with unexpected rapidity by suffocation, with dark patches on both sides of the body, or it approaches gradually as in slow nervous fevers, with gradual failure of the energy of the brain and heart.

Favourable terminations, however, the author witnessed at this stage of the disease, amidst restoration of the cutaneous discharge, urinary secretion, and gangrene of the sacrum.

The duration of the disease depended on its different degrees. When recovery took place in the first stage, the period of seven days might be regarded as the normal duration. If it reached the second stage, recovery took place after three weeks duration; from the third degree of the disease, recovery never took place before the termination of the third week, and usually it was after this. Death took place, as already stated, in the following periods among twenty persons;—in one in the first week; in five in the second; in seven in the third week; in four in the fourth week, and in three at still more advanced periods, viz. on the thirtieth, the forty-seventh, and the fifty-second days.

V. In the account of the abdominal typhus of the village of Stangenrod, Dr Ebel gives a view of the symptoms and causes of the disease, not very different, unless in some particular characters.

This village is chiefly seated on a naked, exposed, isolated eminence, three-fourths of a league from Grünberg, in the vicinity of the Vogelberg. Trees, excepting young brushwood, are not seen in the neighbourhood, and there are as few marshes; but a small stream has its source at some distance, and scarcely touches the extreme boundaries of the district. In several places there appear flats covered with broom, used as pasture grounds. The basis is mostly rocky,—basalt containing iron, covered with a layer of clay and loam, mixed with sand and flint, not very fertile. The raw climate differs little from that of the surrounding country; the air is pure, and the atmosphere rarely disturbed by clouds. That the position of the town is healthy as to the local influences, and not favourable to the production of any endemic disorder, the author infers from this that an endemic disease was never observed in it. The number of inhabitants is 318, chiefly occupied in agriculture and pasturage; and the more indigent work as day-labourers in the neighbouring town (Grunberg.) Commerce or trade are very rarely exercised. In the winter season, the male as well as the female population procure a scanty gain by flax-spinning. Comfort and wealth are exceptions; mediocrity is more common; but throughout poverty and indigence predominate. The houses are generally small, confined, unseemly, low, dirty, and surrounded with dunghills; and no attention is paid to the renovation of the air. The chief food of the inhabitants are vegetables; animal food is rarely used; the bread, on the whole nutritious and good, loses often its digestibility and eatableness by addition of potatoes and pulse. The general want of spring water the inhabitants attempt to supply by collecting rain-water in bad reservoirs.

The clothing of both sexes consists chiefly of linen and half woollen articles.

In this small community, fever appeared about the end of July 1833, under the form of dysenteric typhus, when in some houses several persons, chiefly young, were simultaneously attacked, and some died, while the disease spread through the village, assuming different forms described by the author.

The general characters of the disease were on the whole not very dissimilar from those of the epidemic described by Dr Grossheim; but in the particular varieties distinguished by Dr Ebel, some difference is recognized.

The pulse at the commencement was hardish, quick and frequent, from 100 to 110 or 120 beats in the minute; but afterwards became feeble, small, tremulous, often scarcely to be felt, irregular and intermitting. The breathing in general accelerated, short, confined, sighing, sometimes very difficult, was in the higher degrees accompanied with *rhonchus*, violent cough, at first dry, then loose, with much action of the *alae nasi*. With these were associated much abatement of the strength, exhaustion, relaxation and flaccidity of the muscles, great restlessness, violent headach, sometimes general, sometimes frontal, occipital or basilar, vertigo, confusion of thought, ringing in the ears, and strange sounds within the head, afterwards stupor, deafness, delirium, complete loss of consciousness, sopor, trembling of the limbs, paralytic symptoms, sleep with the eyes half open, *subsultus*, floccitation, twitches of the mouth and face, and complete insensibility to all external impressions. He mentions also, though less minutely than Dr Grossheim, the same state of the tongue, mouth, palate, and nose, the same difficulty in deglutition, the same *anorexia* and aversion to food, the same thirst and longing for cold drinks, the same bitter pasty and slimy taste in the mouth; the same uneasiness; eructation and vomiting, first of food and slimy bilious fluids, afterwards often mixed with black dissolved blood.

As a general character of the disease also he mentions constriction, weight and sense of pain in the region of the stomach and liver, as also in the abdomen generally, but commonly transitory, never continued; *stridor* and *borborygmi* within the bowels; the belly sometimes distended, full, hard, little painful to external touch, sometimes entirely collapsed, empty and insensible to the greatest pressure; constipation; diarrhœa of feculent mucous matters, afterwards bloody, containing fetid, blackish dissolved blood; often *tenesmus*, but afterwards very frequent profuse discharges. Other symptoms are found in the dry burning pungent heat (*calor mordax*) of the skin, or in its being dull, pale, harsh, often covered with clammy sweat, and in the higher degrees of the disease, in its showing a tendency to gangrene where exposed to pressure; in the hemorrhages from the mucous surfaces of the nose, mouth, and anus; and in the weakness of the voice, the indistinctness of articulation, and the general feebleness of all the voluntary motions.

After thus fixing the general characters of the disease as abdominal or gangliar typhus, he distinguishes it into three subordinate forms or varieties; the first (*a.*) *typhus dysentericus*, or that with predominant lesion of the lower part of the intestinal canal, viz. the cæcum, colon, and rectum; the second (*b.*) *typhus gastro-duodeno-entericus*, or that with peculiar disorder of the stomach, liver, and biliary system; and the third (*c.*) *typhus pneumo-entericus*, or that with predominant affection of the thoracic organs.

a. In the first variety the phenomena and symptoms of the affection were, as seen in the Stangenrod epidemic, particularly, well marked; viz. pains in the abdomen, though neither very violent nor continuous, subsequently altogether disappearing; sometimes distension and sensibility of the belly under great pressure, often merely heat in a slight degree; eructation and vomiting rare, but, on the contrary, more frequent diarrhœa, at first of feculent, slimy watery character, then mixed with blood; and in the highest degree of the disease, especially of dissolved blackish fetid blood; often unavailing efforts to stool (*tenesmus*,) but afterwards innumerable evacuations of degenerated matters. The skin was generally at first dry, burning and harsh, afterwards in some cases covered with clammy sweat, not general, but partial. The tongue was covered with a whitish yellow fur, and dry, and the thirst was violent. To these were further added delirium, at first alternating with consciousness, subsequently increasing and passing into continued stupor, then the greatest relaxation and weakness, with manifest nervous symptoms.

b. In the second variety, or the *typhus gastro-duodeno-entericus*, the disease assumed at its commencement the character of bilious fever, with enteric symptoms, but slightly and feebly marked; bitter taste in the mouth, bitter eructations, vomiting at first of bilious matters; constipation, rarely diarrhœa, and when occurring, much less profuse and continuous than in the previous form, sometimes violent in those with desire for acid drinks, total anorexia, and aversion to food of all sorts; constriction, sense of fulness and uneasiness in the region of the stomach and liver, and epigastrium generally; the tongue covered with a dry yellowish brown chopped fur; the tint of the countenance, as also the conjunctiva, bordering on yellow, yet very imperceptibly; the belly not hot, somewhat collapsed, empty, rarely sensible, and then very slightly to external pressure; anxiety, great depression, frontal or occipital headach, alternating with delirium, stupor, and the other typhous symptoms, which in this variety attained a high degree of intensity, and were much more continuous than in the first form. The patients were also restless and very irritable, and showed then the greatest apathy and stupor.

c. The third or thoracic variety of the gangliar typhus of Stangenrod presented the following symptoms;—oppression and fulness within the chest without peculiar sense of pain, sometimes flying stitches, difficulty of breathing, short, hurried, confined respiration, sometimes rattling; violent painful cough, at first dry, afterwards with expectoration of watery yellowish, often thick viscid mucus, which seemed not unfrequently to threaten suffocation; palpitation and anxiety; sometimes diarrhœa, sometimes constipation, but neither so continued, nor so frequent as in the previous forms; the belly not sensible to touch, without heat or distension; the tongue covered with a dry brown or blackish fur; and the taste insipid, pasty and slimy, with complete anorexia. The other symptoms are chiefly those of the general form. At the close of the disorder in its intense form, delirium terminating in loss of consciousness and constant sopor with the greatest insensibility and debility and relaxation were the predominant symptoms.

This disorder the author further distinguishes, much as Dr Grossheim does, into three stages; the first, one of inflammatory excitement or irritation, (*stadium subinflammatorium;*) the second, one of derangement of the functions of the nervous system, (*stadium nervosum;*) and the third, one of decomposition and dissolution, (*stadium nervoso-putridum sive colliquativum,*) or that in which there are symptoms of the greatest debility with disorganization of the capillary vessels. As these stages, however, differ in no respect from those observed in other forms of typhous fever, it is quite unnecessary to notice them in detail.

It appears from the account of Dr Ebel that the disorder now described attacked about 157 individuals, among a population of 318 inhabitants, certainly a large proportion, being much beyond the half; and of this number of 157 attacked, 19 persons died, or very nearly 1 in 8¼, or 12.1 per cent.

It commenced at the close of July 1833, first in the dysenteric form of the disease, attained in the course of the winter a dangerous degree of intensity, when it carried off several individuals, assumed then during the spring a milder and less dangerous character, and terminated in some isolated attacks in April 1834. In this course it spared neither age nor constitution. Children as well as adults were attacked, the young and robust the most violently, and in general males were attacked in larger proportion than females, the latter of whom also passed more easily through the disease. It did not in all cases proceed to developement of the colliquative period, since the disease often terminated before this in recovery, or death ensued in the nervous stage. Rarely did the disease terminate before the seventh day; usually it continued from between the 17th and 21st to the 27th day or thereabouts, showed no distinct crisis but terminated rather by solution in recovery. Upon the abatement of the febrile symptoms, the nervous phenomena, the fits of delirium, the cessation of the discharges upwards and downwards, the skin became moist, first partially, then generally; the appetite returned with sleep, lasting for several hours without interruption; the deafness and stupor subsided, and the strength gradually returned. In some cases, delirium returned but not in so violent a form. The subsidence of the disease was followed in some cases by peculiar *sequelae*, as an itchy eruption, boils over the whole body, œdema of the feet, and in men, of the scrotum, and palsy of individual extremities.

VI. We have now to direct attention to the morbid anatomy of this disease; and though upon this subject we have already had occasion to advert to the researches of the anonymous physician and Dr Frenzel, we must add, that by far the most complete history of this department has been given by Dr Stannius of Berlin, and Dr Grossheim, the physician to the Imperial Grenadier Regiment. It is doubtless true, that in the first mentioned author's report, the cases are designated not abdominal typhus, but simply nervous fever: but upon looking over the reports of the individual cases, the symptoms given are as strongly characteristic of the presence of abdominal or gangliar typhus, as the delineation either of Dr Grossheim or Dr Ebel required. Thus, with the other symptoms of the febrile condition, we find invariably mentioned more or less pain of the belly on pressure, sometimes very considerable distension of the epigastric or umbilical region or both, pain often very considerable over the cæcum, or in the right iliac region; and diarrhœa, sometimes profuse, with *borborygmi* and stridulous or gurgling sounds within the intestines. We subjoin, therefore, a short sketch of the report of Dr Stannius.

Necroscopic appearances in the Head.—In general bloody congestion of the parts within the cranium was not a constant circumstance. The arachnoid membrane in most cases showed no deviation from normal; there was effusion of serum; in some of bloody serum. The substance of the brain also natural in most cases, was sometimes vascular, but sometimes bloodless, especially in the latter stages, and then much serum was contained in the cavities. In one case the brain was bloodless and soft, the ventricles distended with colourless serum, the *thalami* were soft and pulpy, and the *corpora striata* and *pons* were less consistent than usual. The *pia mater* and sinuses were not unfrequently distended with air vesicles, and their blood was usually semifluid.

The most violent delirium, and the most uncontrollable frenzy took place in individuals in whom the cerebral substance appeared for the most part softened. But very vivid delirium, as furious frenzy or low muttering occurred, also in persons in whom little change in the brain was found. Lastly, intense and continued delirium were observed in individuals in whom in the brain and its membranes no changes were recognized after death. No fixed relation was found to take place between the changes in the brain and those in other parts of the body, viz. between lesions of the brain, and lesions of the intestinal canal. But in the case of softening of the brain, unusual redness was found in the intestines, thickening of their walls and ulcers, as in phthisical persons, high in the ileum and not in its end.

The cavity of the spinal canal was not examined. In the semilunar ganglia, in the adjoining fibres, and in the ganglions of the sympathetic nerves, nothing morbid was recognized.

Necroscopic appearances in the Vascular System.—The blood was in most of the bodies fluid, almost void of cruor. The fibrine was either entirely deficient, or was in the form of a gray jelly-like mass. Sometimes it was tarry. Its colour was usually remarkably dark; but this is most applicable to the blood of those cut off at the height of the disease. In the subsequent stages it was fluid and watery, and the clot consisted of a yellow jelly-like mass. Air vesicles were often found in it. Ecchymoses were found in one case, in the subserous cellular tissue of all parts of the body; in others in that of the arachnoid, the *peritoneum*, the *pleura*, and in the submucous cellular tissue of the *ileum*.

The *pericardium* was in most cases natural, the quantity of serum not exceeding the usual; but in one it was bloody; and its quantity was more copious in the latter stages of the disease.

The heart presented no uniform change. The left ventricle was uniformly strongly contracted, containing little or no blood; the right more flaccid, contained much blood. In one, in whom the inner surface of the pericardium was bluish and the subserous cellular tissue emphysematous, the substance of the heart was soft and lacerable. In two the endocardium and the lining membrane of the large and small arteries was peculiarly reddened, almost of a brick red, and not removable by water.

Necroscopic appearances in the organs of respiration.—One of the most constant was capilliform injection of the mucous membrane at the upper part of the larynx, especially of the epiglottis, which was covered with white, gray, or bloody mucus, with great developement of the mucous follicles, which were very distinct. The degree of injection was in proportion to the difficulty of deglutition and the hoarseness. In two cases the epiglottis was thickened and eroded at the edges.

In those who died at the height of the disease, the windpipe was mostly filled with more or less white froth, but more frequently with bloody thin fluid, which was in some cases only grayish and dirty, but in others puriform, or contained puriform and melanotic matter. The tracheal mucous membrane showed no unusual developement of vessels. The cavity of the chest in several cases contained a quantity of yellowish serum. The costal pleura in some cases was much reddened; in one case there were adhesions between the *pleura* on both sides, with injection of the pulmonic *pleuræ*; in one case false membranes and much yellow serum with albuminous flocculi; and in one much ecchymosis under the pulmonic *pleura*.

In several cases the lungs were everywhere sound and crepitating; but frequently both lower lobes were heavy, much distended with blood, and upon being divided allowed frothy serum to escape in great quantity. In several other cases the bloody injection was associated with increased circumference, weight and great softness, while no crepitation could be heard; and the fluid in such cases discharged by incisions was not frothy but bloody serum. Among 23 cases the lungs were quite sound in five. In one case the lungs were thickly occupied by tubercles in different stages of softening as well as healing, without any traces of inflammation in the substance of the lungs being observed. In 10 cases he saw in the lower lobes of both lungs all the traces of inflammation; and in several exudation from the pulmonic pleura; in two cases inflammation of the upper lobes and simultaneous pleurisy. In four cases the lower lobe of one or both lungs was œdematous, and in one of a patient dead in the after stage of the disease, jelly-like exudation had at the same time taken place. In another case general œdema of the lungs was formed.

In all the individuals in whom the intestinal canal and the brain were found very decidedly diseased, the lungs also presented manifest alterations, which bore the characters of inflammation. In cases of slight alteration of the intestinal canal and brain, on the other hand, the lungs were sound, or their lobes were merely œdematous. In most cases Dr Stannius recognized the existence of the pulmonary lesions by the constrained, oppressed, frequent, sometimes painful respiration, by violent cough and expectoration of matter partly bloody viscid mucus, and by stethoscopic examination. In some few cases, however, in which he expected no lesion of the lungs, he was surprised to find them on dissection.

Necroscopic appearances in the digestive organs.—The lips, tongue, teeth, and hard and soft palate, were in those cut off at the height of the disease covered by a more or less consistent brownish black rough crust, which was sometimes dissolved and converted into a brownish gray, tough viscid mucus. In almost all the bodies he found marks of intense inflammation of the soft palate, the *uvula*, the pharynx, and the upper part of the œsophagus.

The œsophagus itself presented a peculiar change not less constant. With the exception of seven bodies, in which, however, there were marks of *angina*, he found in all the epidermis of the mucous membrane loose, much softened, frequently lying in filaments and shreds. In the majority of cases it lay like a shapeless foul green white mass in certain spots of the mucous membrane, while others were altogether denuded. But the extreme parts near the *cardia* were never found so changed into pulp.

The stomach presented nothing constant. Almost always it was collapsed, rarely distended by air. Externally of a dirty gray aspect, it presented along the course of the large vessels not unfrequently dirty blue and reddish gray streaks.* Its contents consisted in the majority of cases of brownish gray, foul, slimy fluid. In the majority the mucous membrane presented nothing remarkable; but almost always isolated circumscribed spots were occupied with minute red points from partial injection of the villi.

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* This appearance, which is often found in fatal cases of typhus fever in this country, we have always observed to be associated with more or less softening of the mucous membrane internally, sometimes to the extent of complete dissolution.

The external appearance of the intestinal canal exhibited no uniform character; sometimes it was much distended by gas, sometimes entirely collapsed. The lower fourth of the ileum was almost uniformly more darkly coloured than the other parts; and the vascularity of the peritoneum at the end of the ileum, and in the region of the cæcum, was uniformly very strongly developed. The contents of the ileum were mostly of a yellow or brownish fluid, rather slimy than watery; on rare occasions, it was rather pulpy than fluid; the colon frequently contained feculent matter.

The intestinal membranes viewed generally, though found in many cases of normal thickness, appeared more frequently extremely attenuated, much more rarely and less in the upper third than in the lower two-thirds. Between the fingers it felt like only one or two membranes, and to the eye the intestinal wall appeared more transparent than usual. The reason of this attenuation, which some have sought in complete wasting of the villous membrane, was contradicted by examining it beneath water, after the contents of the intestine had been removed by repeated careful washing. Dr Stannius then found at the boundaries of those spots, at which the attenuation of the membrane began, separate minute membranous shreds attached to the villous membrane to compensate for the attenuation; and where these membranous shreds covered the villous membrane, the latter retained its usual thickness, whereas where this covering was wanting it appeared extremely thin. When he further examined under water the intestines from the duodenum to its upper third, he recognized the presence of an extremely thin arachnoid membrane, which was spread over the whole villous coat, closely attached to the *villi*, and covering them completely, as a glove covers the finger. The membrane was easily detached by incautious management, appeared already to have been detached piecemeal, before opening the bowels, in the form of *flocculi*, and it was wanting, as was already stated, in the whole of the attenuated boundary of the two lower thirds of the intestinal canal, or adhered only in shreds. The *villi* were larger and more manifest where the mucous coat of that membrane was still covered by that membrane, than in the spots where it was wanting. At length the villous membrane was so thin that the fibrous character of the muscular coat was easily seen through it, and at the first glance its absence could be distinguished. A definite structure he could not recognize in the membrane covering the villous by microscopical observation; and it was neither reticular meshes, nor striæ, nor evident points arranged with each other.

Whether the solution of this membrane, which is manifestly to be regarded as an integrant part of the intestinal mucous membrane, and which Dr Stannius is disposed to regard as the epithelium or epidermis of the villous membrane, alone gives occasion to this remarkable thinning of the intestinal tissues, cannot be determined. This attenuation was found in 5 of the 23 cases, and Dr Stannius adds, that it is in other respects one of the most constant peculiarities of the morbid anatomy.

Very different from the solution of the *epithelium* is that of the mucous membrane itself, which takes place either from accumulation of air beneath it *(emphysema,)* or from previous softening and thickening of the mucous membrane with intense reddening of the same.

The injection of the blood-vessels of the intestinal canal presented the greatest differences, according to the stage of the disease, at which the individual had died. In those cut off at the beginning or at the height of the disease, the ramiform or capillary injection of the submucous cellular tissue was distinct; but, besides, and indeed without continuity, confined to spots more or less extensive, it presented delicate close vascular ramifications and points, forming by their close disposition either broad dark-red bands or spots. The outer edges of the Kerckringean *plicae* were of a cherry-red colour, or that they appeared as if bordered; and in such spots the mucous membrane was sometimes detached and easily separable. It is remarkable that great swelling or ulceration of the Peyerian glands by no means always corresponded with great redness or softening of the mucous membrane, while in the neighbourhood of altered glands it was often quite sound. And it is also to be remarked, that the intense injection and red colouring of the internal intestinal layer, appeared less deep, and the spots distinguished by thinning of their walls.

The *villi*, which at the unattenuated parts of the canal were natural in size, were at those where the epithelium had disappeared, very small, as if truncated and remarkably pale; in clear day light they were seen injected to their utmost *apices*, especially in isolated uniformly red coloured portions of the tube. Before proceeding to delineate the changes effected in the glands of Peyer and Brunner, Dr Stannius makes the following remarks.

1. In all the instances in which he inspected the bodies of persons cut off by nervous fevers, he observed the same changes in greater or less degree, with the exception of one, in whom the attenuation and solution of the epithelium had taken place, one cut off by petechial typhus, and another, in both of whom

were found old ulcers proceeding from the glands of Brunner, with irregular basis, notched or denticulated edges, and knotty particles of white filaments and tubercular masses at the corresponding parts of the peritoneal walls,—thus presenting the character of the intestinal ulcers found in phthisis, and not as in typhus at the lower parts of the *ileum*.

2. The intensity of these changes was not in the direct ratio to the intensity and duration of the delirium, or to the restlessness and anxiety of the patients.

3. A dry parched tongue did not always permit the observer to infer the existence of alteration in these glands, which indeed, were also found in those individuals in whom the tongue had never been dry.

4. The intensity of the pain on pressure in the belly, especially in the caecal (right iliac) region, was not a certain symptom of the presence of great changes in the glands; and it appeared to bear a more direct relation to the extent of the inflammatory changes in the peritoneum and mesenteric glands. Dr Stannius found great enlargement, softening, reddening, erosion, even deposition of hard lardaceous matter in the glands of the mucous membrane, the existence of which was not indicated by any painful sensibility on pressure on the abdomen. But the pain was always intense, when the ulcers penetrated, with destruction of the muscular tissue, to the peritoneum.

In all the cases the glands of Brunner in the duodenum came very clearly under inspection; sometimes they appeared somewhat enlarged; but rarely were they surrounded by red vascular circles. In the whole course of the *jejunum* the glands presented no change; at the most some of the Brunnerian glands might be a little more prominent than usual, or might present an opened, probably blackened orifice. In the *ileum* the Kerckringean *plicae* were sometimes found high up interrupted by thickened portions (the Peyerian glands,) in which were still observed several round whitish spots. Sometimes these parts were more elevated, and sometimes a little swelled; and then not unfrequently their surface presented a pale-rose-red colour. Frequently, instead of these round whitish or white bordered spots, were found blackish orifices. This might be the sole change, or it might be associated with those already specified; viz. swelling and reddening simultaneously. Sometimes were seen in the same train of glands two or three similar small circular apertures with prominent edges, while close by these, without trace of change, whitish bordered spots came in sight, with remarkable distinctness. When in place of these spots, many openings had formed, the glandular layer often assumed a trellised or reticular appearance, in which the diminished closely pressed edges formed the trellis-work. In other instances, without evident enlargement of the apertures, the edges appeared to be particularly prominent, soft, whitish, pale-red, brown or blue-red, of the same kind of aspect as the surface, or as if scaly, with attached yellowish *flocculi*, resembling the particles of the epithelium of the rest of the villous coat, or eroded and ulcerated. The bottom of these ulcers is either deep with much adherent mucus, or a white caseous matter is deposited from it, but often it is elevated, covered by a hard lardaceous white mass, which in one case was as thick as the back of the scalpel. This elevation is either pretty uniform, or it divides itself as it rises from the base into white, round, sometimes acuminated, uvula-like fleshy or lardaceous granulations of dissimilar size. On the other hand, the muscular coat is sometimes exposed quite denuded, or the destruction had attacked this, and even the ulcer may have opened itself a passage into the peritoneal cavity.

The size of the parts so altered is regulated by the commencement in the glandular layer; high up in the canal where the Peyerian glands are small, so also are the ulcers; below in the vicinity of the valve of Bauhin, Dr Stannius found the ulceration from three to four inches in circumference. It may be admitted as uniform, that in those suffering from gastric nervous fevers, the lowest glands, or those situate next to the colon, are first and principally attacked,—a law which does not hold good with regard to the intestinal ulcers of the phthisical, which often have their seat much higher up, though they usually attack the lowest situate glands. Though in a great number of cases the glandular affection, whether it had gone to simple enlargement, or to erosion, or ulceration was confined to the *ileum* alone; yet in others the isolated glands of the colon were diseased.

Like the Peyerian glands, those of Brunner were also often the seat of pustules and ulcers. Opening of their orifices or blackening of the same, elevation of their borders, deposition of caseous matter on the more or less strongly injected basis, loss of substance, and denudation of the muscular coat were also observed. The degree of vascular injection close to, and at a distance from, the diseased glands was extremely different. When the injection was considerable, which was the case in the bodies of those dead at the commencement, and at the height of the disease, it was confined either closely to the surface and edges of the ulcer, or it extended to the farther circumference, upon the neighbouring villous membrane, which appeared in several cases deeply red pointed, as if soaked in blood, sometimes at once thickened, soft, slightly soluble, and even eroded. In three cases, ecchymotic patches were observed in the neighbourhood. In such instances patches of the peritoneum corresponding to the diseased parts presented great vascularity, and redness. In those dead at the latest stage of the disease or of its consequences, the whole intestine was remarkably bloodless, and there appeared in the neighbourhood of the diseased glands scarcely any trace of vascular injection.

Scarcely any organ presented in its condition individual differences so great as the colon. Sometimes it appeared to be strongly distended by air, when externally it appeared of a more yellow colour;—sometimes completely collapsed, and even shrunk, when its exterior surface appeared bluish. In some cases in which its contents were bloody, the peritoneal coat presented a dark bluish tint here and there, passing into black. But in most cases its external appearance presented nothing peculiar. The contents varied both in quantity and in kind. Sometimes the colon contained besides a white, tough, almost glutinous mucus, solid brown-coloured fæcal matters. In the majority, and especially in those dead at the height of the disease, the contents consisted of a brownish or green fluid. The appearance and degree of injection of the colic mucous membrane was manifold. Several times a mere ramiform, sometimes a capilliform injection, not very rarely a very dissimilar, above capilliform, then ramiform, and at last, though rarely, a red-pointed appearance, was observed.

In one case the colour of the cæcum was brown, almost black. In another case, in which, during the last days of life, black, red, or brown tarry matters had been evacuated, and in which the contents of the upper part of the colon were in colour and consistence like chocolate, and in the lower part of the colour of cherry marmalade, and the consistence of tar, almost the whole mucous membrane of the colon presented a colour passing from the cherry-red to greenish, which could by no means be removed by water, but showed an extremely close red injection. In the rectum, where the injection was more capilliform, several ecchymotic patches were found in the submucous cellular tissue.

Before describing the state of the glands in the colon, he premises the following general remarks.

1. More frequently than in the ileum were the colic mucous glands free from all degeneration. Such at least was the case in five of the 23 bodies examined.

2. Great degeneration in the ileal glands might take place, while the colic glands were not in the least degree altered. This at least was remarked in four cases in which the ulceration of the ileal glands was intense.

3. Conversely, in one case in which the ileal glands were scarcely elevated, and were not injected circularly, the isolated colic follicles were much swelled, with gaping orifices, to which a

dark-brown secretion adhered. True ulceration, however, had not taken place.

4. As little, as was the case in the affection of the ileal glands, did that of the colic glands bear any direct proportion to the intensity of the symptoms,—either to the violence of the delirium, whether loud and furious, or low and muttering, or to the dryness of the tongue, or to the rough viscid coating covering it and the lips, or, in short, to the pungent heat of the skin, and the total suppression of its secretion.

5. He thinks it probable, however, that the effusion of large quantities of pure blood or of the tarry matters denoted a more decided affection of the colon.

In a great number of cases the affection of the colic glands was confined to a degree of elevation or prominence of their borders, to dilatation of their orifices, and a more abundant secretion of mucus from them. The borders were frequently surrounded by thick red vascular wreaths; sometimes they had a bluish aspect. The orifices were frequently black at their ground; and sometimes a solid compact whitish yellow matter was deposited on their basis.

In higher degrees of the lesion the ulcers lost their originally round shape, and were irregular; and often several small ulcers coalesced and formed one large one; and in this case the edge was irregular, not unfrequently indented, elevated, and bluish-red, and the base was generally something raised, hard, lardaceous, white, yellowish, or reddish with black points or spots interspersed. Sometimes, while in certain spots of the base of the ulcer, the muscular coat was exposed, other points were as it were occupied with warty excrescences. These dissimilar productions were often much injected. These ulcers might penetrate even to the peritonæum, which was exposed; but here it was usually found that by adhesion to the mesentery or deposition of albuminous matter, thickening of this membrane externally had taken place. In one case of this kind he remarks the ulcers had paved a way by progressive destruction into the abdominal cavity.

Ulcers in the process of cicatrization were found in three cases. Their surfaces were flat and pale; their edges formed folds converging toward the blackish-gray basis; and on these edges were seen very fine closely set vascular ramifications. But, as an exception, were also seen ulcers in the process of cicatrization, with dark bottom and pale edges, in which also from the middle of the basis paler spots had risen in an isolated manner.

The author further remarks that the glands were found particularly altered, and in the intense cases most strongly in the neighbourhood of the ileo-cæcal valve in the cæcum. The vermiform process was seldom free from ulcers. The lower parts of the colon presented in general nothing abnormal.

The abdominal cavity itself presented in the majority of cases nothing remarkable. Its serous membrane was smooth; in general its cavity contained no unnatural quantity of serous fluid, and in three cases only was there a little more than usual. In those cut off at the height of the disease in the subserous cellular tissue of the parts lying in the cæcal region was observed a great number of red injected vessels, the most of which, running parallel with each other, did not communicate by any marked ecchymosis.

The mesenteric glands, especially the deep-seated lying towards the *cæcum*, were in the bodies of almost all those cut off at the height of the disease more voluminous than usual, much distended externally, injected of a livid red, of bluish-red colour, in the centre bluish-gray or ash-gray, and frequently quite soft and pulpy. When examined in those who died in the latter stages of the disease, they were found more solid, less distended, and more of an ash-gray colour.

In the pancreas no alteration was ever observed.

In the majority of cases the liver appeared to be of normal consistence and colour. But the blood found in its vessels was invariably very fluid, almost watery, not unfrequently frothy. Frequently the biliary vessels were filled with the normal quantity of bile; but in some cases (two) they were empty. Not unfrequently the liver was softened in its whole mass or individual parts.

The gall-bladder was in no case found full; generally it was collapsed. Almost always, both in those cut off at the height of the disease, and in those destroyed at later stages, it contained in them, pale-yellow, or yellowish green, often watery mucous fluid, not reddening litmus paper or tinging the skin. Frequently this fluid contained some gamboge-yellow grains of pulpy consistence, and which sometimes, though not always, gave a yellow colour to the skin and nails. As an exception there was found in four cases a thick green colouring bile.

The spleen was almost always distended, soft, almost or actually pulpy, externally congested with blood, and of a brick-red, cherry-red, or blackish-red colour. In one case it crepitated, and upon incision air-bells escaped. The substance in this case was very much loaded with blood, bluish-red and pulpy. Conversely, and as an exception, the spleen was of firmer, almost normal consistence, in two who died early, and in two who died in the advanced stages of the disease.

The kidneys showed in the majority of cases a completely normal state both with respect to consistence, to colour, and to their proportion of blood. In one case there were found in the tubular substance of the right kidney two, and in that of the left three abscesses with yellowish purulent matter, which was inclosed in a membranous capsule. The urine contained in the kidneys was generally turbid, and like a mixture of sand and water.

The mucous membrane of the urinary bladder, though examined several times, presented no alteration.

After this minute and elaborate delineation of the appearances found in the different organs of the body in persons cut off by fever, it may seem superfluous to give the account by Dr Grossheim. But in the course of this article, we trust that it will appear that this repetition, if repetition it can be called, is not only not useless, but is really of very considerable importance in elucidating and confirming the truth of certain pathological doctrines which we hope to be able to establish with some degree of certainty. The account of Dr Grossheim, therefore, we now subjoin.

Head.—The *dura mater* appeared throughout pretty strongly injected, but never inflamed; the sinuses moderately full. Beneath the arachnoid membrane serous fluid was not very rarely found effused, more copious in those who during life had presented somnolence in a high degree. Similar progress had been made by the serous accumulations in the cerebral ventricles. In no case were these quite filled; but almost always the posterior *cornu*, to which evidently, as to the most dependent part, the fluid had gravitated.

The *pia mater* of the cerebellum appeared in its vessels more injected than that of the brain. But still more strongly were the blood-vessels of the *medulla oblongata* distended with venous and arterial blood.

Spinal cavity.—The cellular tissue between the *dura mater* and the inner surface of the spinal canal was darkened by blood, which was secreted and coagulated within it. The outer surface of the spinal *dura mater* was every where of a dark red; the inner surface feebly reddened; in some parts of a dark marbled tint. Within its cavity very uniformly was found a considerable exudation of serum, more or less darkened in colour. After removing the posterior arches of the *vertebrae*, the serum accumulated in the lumbar region in a fusiform or distaff-like swelling. Its quantity varied between five and ten table-spoonfuls, or about between three and five ounces. The quantity was the same whether the corpse had lain on the back or on the belly. The vessels of the *pia mater* and the *vasa spinalia* were uniformly much injected.

The medullary matter was in the shortest cases normal in consistence. A tract of the spinal marrow was usually softened to that degree that after section the medullary matter could be expressed like thick whitish purulent matter. This Dr Grossheim saw not once in the cervical region, pretty often in the lower third, but most frequently of all in the middle region of the chord. In the vicinity of the softened parts the matter of the spinal marrow was firmer than usual, and sometimes a little swelled. The roots of the spinal nerves were throughout reddened, and covered as it were with a jelly-like cellular matter. The *neurilema* of the nervous chords of the *cauda equina* was uniformly reddened. This colouring was observed in many bodies also in the large nervous trunks which are formed from the lumbar and sacral nerves. Once, and indeed in the body of a very robust individual, this red coloration was evident in both trunks of the ischiatic nerves, to the middle of the thigh.

The medullary matter of the nerves retained their white colour. The semilunar ganglion appeared in two bodies when divided to be of somewhat darker red than is usual.

Chest.—The heart was flaccid and soft, as if par-boiled. The pericardium contained somewhat more serum than usual, which was also blood-coloured. The right ventricle and its auricle were filled with fluid, dark-coloured, often frothy blood. The left ventricle contained in some bodies some dark-coloured blood; and in all, the same was found in the thoracic and abdominal aorta. The inner walls of the veins as well as the arteries, were more or less darkly reddened; and the colouring remained after washing with the sponge; but after removing the internal tissue of the arteries, the middle coat retaining its white colour came into view.

The lungs appeared dark-coloured, and sections discharged dark-coloured frothy mucus.* The bronchial ramifications contained similar dark-coloured mucus, and their walls were upwards to the larynx of the same colour. In the three dead after the fourth week, the lungs were paler, and the bronchial ramifications were filled with whitish mucus.

Abdomen.—The peritoneal coat of the intestinal canal appeared in individual points red-speckled, especially on the intestines in the pelvis, the beginning of the colon, and not unfrequently also the stomach. Perforations in the tract of the intestines he never saw.

The intestinal mucous membrane was in some bodies in certain points merely slightly reddened; in many, the redness was very intense, of a dirty colour, and diffused, especially in the stomach, *ileum*, *caecum*, and ascending colon. In most of the bodies there were ulcers in the mucous membrane, only twice in the stomach, much more frequently in the *ileum*, the *caecum*, and ascending colon. The shape and extent of these ulcers were various;—roundish, oblong, jagged, irregular, from the size of a pea to that of several square inches, occupying the whole circumference of the intestine, particularly at the ileo-caecal valve and in the *caecum;* and these large ulcerated surfaces, Dr Grossheim thinks, were probably produced by the coalescence of several small ulcers. Their penetration in depth depended on the duration of the disease. In some the whole textures of the intestinal canal to the peritoneal coat were destroyed, and the latter was so soft, that in cleaning the intestine, notwithstanding the greatest caution, it was rent, and a large perforation was formed. The circumference of such ulcerated places was always soft, sharply cut, and the peritoneum was very easily detached from the muscular coat. In the ulcers, the mucous membrane only was destroyed, and they appeared to be superficial loose ulcers, with a discoloured red ground. In a third order of ulcers, there was unequivocal thickening of the intestinal walls three or fourfold, and in the centre of the thickened point was a peculiar solid, eroded, yellowish tissue, like the purulent core of a boil. This was in one case so completely formed, that it was with difficulty detached from the bottom of the surface of the ulcer by the back of the scalpel.

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* This seems a mistake. The author says distinctly, Schleim; but in all cases similar, it is serum more or less deeply tinged, which issues from the incised surface of the lungs in fatal febrile cases.

Besides this species of ulceration, he twice found an extraordinary number of those yellowish tubercular elevations, which by many have been compared to small-pox, and have been quite rightly called an internal *exanthema*. But they contained no purulent matter or fluid, and were of solid consistence. Dr Grossheim thinks they might probably be the enlarged and degenerated glands of Brunner proceeding to ulceration.

The elliptical glandular patches of Peyer were sometimes scarcely visibly changed, while around were ulcerations. Often they were merely thicker and redder than usual; often ulcerated with the yellowish *nucleus* in the middle; and often they were entirely suppurated. Most rarely their surface was seen like superficial patches of net-work. This form he saw once only in individuals who had been long ill, in whom also, judging from the glands, he believed he observed fine cicatrices in the mucous membrane, and he regarded this condition of the glands as cicatrized points.

The coloured or discoloured contents of the *ileum* and colon, according as the patients were wont to discharge them in the last period of the disease, and which are usually named bloody, always presented in their intensity similar progress with the colouring of the morbid intestinal mucous membrane.

The mesenteric glands were almost, without exception, indurated and enlarged from the size of a large pea to that of a small walnut. Their incised surfaces were reddish-coloured.

The liver retained not its normal colour. With discoloration its surface presented asteroid points corresponding to the ramification of the most delicate vessels. The right lobe always contained more blood than the left; but Dr Grossheim is uncertain whether this was or was not normal.

The gall-bladder never contained bile of a normal character. That fluid was always much thinner, clearer, frequently transparent, sometimes clear yellow, or of a dirty whitish. In quantity it was sometimes normal, rarely increased. But most frequently of all it was so diminished that scarcely was any left.

The spleen was enlarged and much softened. The kidneys were on incision more vascular than usual; but in structure they appeared unchanged.

VII. After these details of the morbid anatomy by Dr Stannius and Dr Grossheim, deduced from nearly the same number of morbid inspections, we have now to submit some pathological observations on the nature of the disease, and especially on the question, whether there be sufficient grounds for admitting the existence of a peculiar species of typhus with abdominal or intestinal symptoms, and if there be, what are the characters of this peculiar species of typhus.

1. It appears, in the first place, that though Dr Stannius applies to the fever, of the morbid anatomy of which he has given such complete and accurate details, the name of *nervous*, yet not only were more or less pain and uneasiness in some parts of the belly, generally in the epigastric and umbilical region, and, almost invariably before the disease completed its course, in the right iliac region, with diarrhœa, and *borborygmi*, and a morbid state of the intestinal secretions, but there were found in the dead bodies of the fatal cases unequivocal proofs of very considerable disease of the intestinal mucous membrane. These symptoms and morbid appearances accorded so closely with those observed by Dr Grossheim, that, whatever difference may be recognized in the degree of the symptoms and traces of morbid action, no candid mind will be capable of admitting any essential difference in kind. From the fact of this identity in semiography and morbid anatomy, it results that if the disease described by Dr Grossheim is to be referred to the head of abdominal typhus, then that described by Dr Stannius is equally to be regarded as abdominal typhus. Now, though Dr Grossheim, in the title of his paper, does denominate the disease of the Grenadier regiment nervous fever, he states explicitly and repeatedly in his paper, that the cases were all

of the kind denominated abdominal typhus. Thus he explicitly states, in speaking of the prevalence of the disease among the troops, that of the whole number of 112 instances of sickness, not fewer than 107 were cases of abdominal typhus; and immediately afterwards, in specifying the proportion of attacks among a corps of 306 men, he repeats the statement, that all those attacked were affected with symptoms of abdominal typhus. In a subsequent passage in the second paragraph of his observations, on a question stated regarding the morbid condition of the spinal marrow and its investments, and its influence in the production of the phenomena of this disease, he distinctly speaks of the dissections as of those of persons dead of abdominal typhus, "-Bei den Leichen der am Typhus sic dictus abdominalis Verstorbenen" u. s. w. It is impossible, therefore, to doubt that the disease described by Dr Grossheim is regarded by that physician as abdominal typhus; and, as a necessary conclusion from this admission, it follows that the disease from which Dr Stannius derived his morbid anatomy is by parity of reason abdominal typhus. If other evidence were wanting as to the fact, it may be found in the treatment of the cases of which Dr Stannius has reported the dissections. In not one of these cases was it neglected to detract blood from the belly by means of leeches; and in several of them so many as 100 and 150 leeches were applied to the belly.

2. In the second place, admitting that the diseases now mentioned, viz. the nervous fever of Dr Stannius, and the nervous fever and abdominal typhus of Dr Grossheim, are similar or rather identical, we have next to inquire whether there be evidence to prove the existence of such a disease as abdominal typhus as distinct from nervous fever. This point can be determined only by attentive consideration of the symptoms and their progress, and the appearances found in the dead subject in fatal cases. From the account of the symptoms given by the different authors before us, but especially by Dr Frenzel, Dr Stannius, Dr Grossheim, and Dr Ebel, it results that the symptoms presented by the disease are in all respects similar to those of ordinary typhus, except in the more prominent and conspicuous character of those of the abdominal viscera and intestines. We find the same headach and pain of the back and limbs, with the flushed countenance, suffused and turbid eyes in the commencement, the same delirium and loss of memory and muscular power in the course of the disease, and the same sopor, torpor, and extinction of power towards the close. Do the symptoms of uneasiness and distension in the epigastric and umbilical regions, then, it may be asked, constitute the sole difference? To this it must be replied, that in a large proportion of cases of typhous fever, and especially the genuine spotted typhous fever,

more or less pain, with distension of the epigastric and umbilical regions, constitute conspicuous and sometimes urgent symptoms. They are particularly so in young subjects, and are so urgent as to require not only in them, but in many adults, the repeated application of leeches for their alleviation and removal. This at all events has been witnessed for several years in the typhous fever which is almost at no period totally extinct in Edinburgh and its vicinity, but which is generally most prevalent in winter and spring. Not only, however, is this symptom very frequent, but along with it is found another, to which both Dr Grossheim and Dr Ebel attach considerable importance, that, namely, of the sense of the gurgling of fluid or liquid matters within the intestines, communicated to the fingers or to the ear. The painful sensation in the right iliac region is less frequent; but that also is occasionally present, and often in a very intense degree.

While this is maintained as a circumstance proving the general resemblance of the two diseases alleged to be distinct, it must be admitted that diarrhœa is a very rare occurrence, and vomiting is by no means very frequent. In upwards of 280 cases treated in the Royal Infirmary of Edinburgh during the last nine months, we have good authority for saying, that in one only was there diarrhœa; and in one only a discharge of blood from the intestines. In all the others the bowels were so constipated, that if medicine was neglected for a single day, no evacuation took place; and it required the regular and periodical exhibition of purgative medicine to prevent constipation, and much aggravation of the symptoms.

It appears, however, that the existence of this symptom of diarrhœa, even in ordinary nervous fever, has not been overlooked by authors. Huxham in his account of nervous fever, mentions the load and oppression at the *praecordia*, that is, the epigastric uneasiness, as almost constant in slow nervous fever, and diarrhœa with crude, thin, colliquative stools as being a bad symptom; and in the description of malignant fever or typhus, he specifies " the great heat, load, and pain at the pit of the stomach, with perpetual vomiting of porraceous or black choler, and most troublesome singultus" as frequent symptoms, and " green, livid, or black intestinal discharges, frequently with griping and blood, and hardness and tension of the belly, with profuse liquid stools," as bad symptoms.

Similar evidence might be adduced from the writings of other physicians who flourished at that time and afterwards. Our limits, however, will only allow us to refer to an interesting monograph by Hufeland himself, published very nearly forty years ago. In an account of an epidemic fever which prevailed at Jena in the years 1796, 1797, and 1798, and in which this indefatigable writer described the disease and its complications, the second complication which he describes is the gastric, and his language shows that he anticipated being censured for innovation by such a distinction. In that treatise he states with much clearness and precision the symptoms distinguishing the gastric state, and his observations show that he was well acquainted with one variety of the disease.

When considering the means of distinguishing the presence of the gastric complication, he proceeds in the following manner :—" But when this symptom, viz. loaded tongue, is accompanied with fulness of the epigastric region, and a painful sensation on pressure, or tension, pains, or spasmodic sensations in this region, which are often associated with a degree of external distension, causing very painful anxiety, and obliging the patient to complain, without quick and short breathing,—squeamishness and uneasiness, or frequent eructations; when the complexion appears something yellowish, especially round the mouth and nose; when the patient feels frontal headach or vertigo; when the fever and other symptoms of the disease increase in proportion with the gastric symptoms; and when discharges taking place voluntarily or consciously upwards and downwards, are followed by alleviation of the symptoms, and restoration of the strength, then we may justly infer the existence of gastric impurities."

In the illustrative cases which follow, Hufeland notices more pointedly the symptoms of this condition, and adverts also to the painful sensations in the umbilical region, sometimes with, sometimes without diarrhœa. Thus he mentions in the case of a girl of 6½ years of age, who came under treatment on the 8th day of the disease, the presence of violent diarrhœa with frequent watery stools, violent pain in the region of the navel, bitter taste in the mouth, thickly coated tongue, a longing for acid drinks, especially vinegar, frontal headach, and delirium with pungent heat of the skin; and the persistence of the pain in the umbilical region such that it could not be touched, with watery diarrhœa, for several days.

It is quite unnecessary to refer on this point to Hildenbrand's account of the typhous diarrhœa of 1809, and the typhus of 1813, in which we believe that all the readers of this Journal are aware that one form was accompanied with unequivocal symptoms of intestinal disorder.*

From these facts, we conceive, it results that, in a large proportion, if not in all cases of typhous fever, there is, at some period of the disease, more or less distension and painful uneasiness in some part of the belly, especially the epigastric and umbilical regions, sometimes in the right iliac; and that these symptoms may assume such a degree of urgency and intensity as to give a predominant character to the disease. It may in such circumstances become a question whether these symptoms are associated with, and dependent upon, disease of the gastric or intestinal mucous membrane, or both, or whether the disorder of these organs is not part of the general disorder of the whole system,—especially of the vascular system. It is manifest, nevertheless, that, whatever importance and predominance these abdominal or gastric or intestinal symptoms may assume, the other series of febrile symptoms taking place in the nervous system are not alleviated, and do not disappear. This circumstance tends to throw some doubt upon the justice of the distinction of the separate and individual character of abdominal typhus, and to give considerable weight to the idea, that these symptoms constitute only a complication, as maintained by Hufeland and others, and not a separate form of fever.

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* Edinburgh Medical and Surgical Journal, Vol. xxiii. p. 378 and 382, and xxiv. p. 332, &c.

3. It must not be concealed, nevertheless, that in the delineation of abdominal typhus, as given by the authors now mentioned, two circumstances claim particular attention as indicating a distinctive, if not pathognomonic character. These are the occurrence of diarrhœa, and the formation of ulcers in the muciparous follicles and mucous membrane in fatal cases, and the absence, so far as the testimony goes, of the characteristic eruption on the skin.

Regarding the first circumstance, may it not be the case that the neglect of unloading the intestinal canal of their contents early and repeatedly in the course of the disease, is one cause of the greater frequency of the follicular inflammation and ulceration in foreign countries than in England? It is well known, that purgative medicines are much less freely and frequently used in the therapeutics of France and Germany than in those of this country; and it may be justly asked, whether the neglect of removing, by active and appropriate means, employed and repeated according to effects, secretions from a membrane, which is not only in a very unhealthy state as to its circulation, but as to its secreting apparatus, may not tend to cause that vascular congestion, stagnation, and inflammation, which terminates in ulceration. Upon this point, we think that the discovery of Professor Schonlein of Zurich tends to throw important light. That physician has discovered in the excrements of patients labouring under abdominal typhus, minute microscopical crystals of phosphate and some sulphate of lime and soda, insoluble in water, and formed, as he conceives, by the muciparous folliclea. It seems perfectly natural to suppose, that these crystals are the result of a morbid action, that their presence must irritate the membrane, and maintain, if not cause, the diarrhoea, and that their formation might be prevented by the active and repeated use of cathartic medicine, and the subsequent diarrhœa thus prevented. Could these crystals be formed unless some change had taken place in the chemical powers of the intestinal mucous membrane, and unless the secreted matter were retained a considerable time within the interior of the canal, and in contact with the surface of the membrane and its follicles?[*]

Regarding the second point, viz. the absence of the spotted eruption peculiar to typhus, it may be remarked that this might in some cases be so slight as to escape notice. But it must be observed, that, on the one hand, it is invariably present in the cases of typhus in this country, with epigastric umbilical or general abdominal uneasiness, and, on the other, until we are positively assured of the fact, that it is not present in these cases of abdominal typhus, it would be premature to attach any importance to the circumstance.

4. These observations are forcibly suggested to us, not only by the difficulties now mentioned, but by the fact, that not even all the German physicians themselves seem to be quite agreed whether this disease be a mere modification of typhous fever, or entitled to a distinct place and rank. Thus Bischoff regards it as a nervous fever complicated with inflammation of the mucous membrane of the *ileum* (*Febris nervosa cum ileitide,*) a notion which seems to be adopted also by Professor Hornung of Salzburg, and Dr Stannius of Berlin. Eisenmann, who applies to the malady the denomination of *Ileopyra*, considers it to be primary inflammation of the ileal mucous membrane and follicles; and the same doctrine is expressly taught by Ferdinand Lesser of Berlin, who, in his classical work on the disease in question, regards inflammation and ulceration of the mucous membrane and muciparous follicles of the digestive canal as an independent disease,—the fundamental cause of many fevers named nervous, and mucous, and of dysenteries, and as a symptom of many acute and chronic distempers.[†] The same view is taken by Dr Frenzel, who considers the fever as nothing but the reflected consequence or symptom of the local inflammation, and its progressive changes or transitions and termination.

The views of the late Hufeland, if not original, are at least highly judicious. While he admits the small and trifling peculiarity of symptoms, on which the physician has to found his diagnosis of the existence of this affection, he does not allow that it is originally at least an inflammatory disorder.

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[*] See Medical Intelligence of the present Number.

[†] *Die* Entzünding und Verschwarung der Schleimhaut des Verdauungkanals als selbständige Krankheit, Grundleiden vieler so genannter Nerven fieber Schleim fieber, Ruhrer, und als symptomatriche Erscheinung vieler acuten und chronischen Krankheiten; mit 1 Schwarzzem und 6 ausgemalten Kupfern. Berlin, 1830, bei Enslin.

"The experience of all authors as well as my own convince me that it is a very obscure, feebly marked, nay often absent condition. Fever, an irritated, rapid, unusually small pulse, feebleness, all the usual symptoms of a nervous state, with diarrhoea, a tongue sometimes red, but sometimes foul and furred, and in the belly, the peculiar seat of the evil, sometimes no sensation, no external perceptible change, sometimes a painful feeling in the iliac and inguinal region usually of the left side, but only when the physician presses with precise examination on this part, when he often feels in it a degree of tension and hardness;—this is all. How little and how uncertain? and how often may it be confounded with the usual symptoms of nervous fever."

"Upon investigating more closely the character of this state denominated inflammation, the first circumstance which strikes us is, that it may be present or absent, as many morbid dissections have proved. It does not belong to the essential peculiarities of the disease; still less can it be considered as its constituent and fundamental cause; but it belongs to the symptomatic affections, to the order of symptomatic inflammations, which may accompany this fever. It is further not a genuine inflammation, but a superficial inflammatory irritation of the intestinal mucous membrane, connected with the production of festering degeneration, and softening of the same, but which may sometimes exist without any inflammation,—quite similar to the aphthous inflammation of the mucous membrane of the throat, which is often seen in nervous fevers, especially of the gastric and catarrhal order."

Hufeland further thinks that this abdominal or intestinal order of symptoms belongs to the class of *exanthemata*,—an opinion which derives some support from the imagined resemblance of the state of the intestinal canal to that which takes place on the surface of the skin in small-pox, and other pustular diseases, but which is not perfectly in accordance either with the healthy or morbid anatomy of the intestinal canal.

The anonymous author of the paper in Hufeland's Journal, without saying positively whether the disease is primary or secondary in all cases, contends for its inflammatory nature, and accordingly maintains the absolute and indispensable necessity of antiphlogistic measures, and the rejection of all tonic, nervine and antispasmodic remedies.

Dr Grossheim admits the presence of inflammation of the intestinal mucous membrane; but he places it along with other morbid phenomena, does not assign it a first or conspicuous situation, and observing that it cannot be viewed as natural to the disease, he proposes the question,—whether the uniformly observed morbid change in the spinal marrow, viz. softening of the lumbar region, or the partial inflammation of the intestinal mucous membrane, and enlargement of the mesenteric glands, is to be viewed as capable of producing the symptoms which appear in the first stage of the disease.

As the intestinal mucous inflammation is the chief circumstance about which he conceives there can be much question, after remarking that this is distinguished by two circumstances, *1st*, anomalous secretion, and *2d*, anomalous sensations, and that all other symptoms are secondary, he inquires whether these symptoms exist in the early stage of abdominal typhus. Anomaly of secretion is shown, he adds, either in diminution, as in the intense stages of inflammation, or in increased secretion giving rise to diarrhœa. These anomalies in the energy of the mucous membrane, he maintains, are by no means constant or essential symptoms to the incipient disease. Excepting the furred tongue, and impaired appetite, and the sense of fulness and painful weight at the epigastric and especially the right hypochondriac region, which was truly painful on pressure, he could not in the commencement of the disease recognize any symptoms unequivocally indicating the presence of inflammation of the intestinal tube. Upon examining the belly by touch and pressure, sensibility upon strong pressure was very rarely detected; and it ought, he observes, to be constant, at the beginning, were the inflammation of the intestinal mucous membrane the generating cause of the disease. From these several facts and considerations, Dr Grössheim infers, that, in the origin of the disease, there is no inflammation of the intestinal mucous membrane, but that it is developed at a later period, and that, though the formation of the same were completely established in the beginning of the disease, the predominant symptoms of the initial stage could not thence derive their condition.

Dr Grossheim next proceeds to determine the question, whether the origin of the disease, and the explanation of its symptoms, can be found in the lesion of the spinal marrow, its investments, and the nerves issuing from it.

To determine this point, he recals to the recollection the following considerations.

1. The phenomena with which the disease commences, and those with which it is accompanied, as feebleness and general lassitude, shivering, and painful stitches in the back and limbs, are most easily explained by referring them to disorder of the spinal chord and its vessels.

2. In the bodies of those destroyed by abdominal typhus, especially in those who were carried off early, that is, after the end of the fifth day, he found, without a single exception, the marks

of inflammation of the spinal marrow investments, with bloody serous exudation, and the origins of the nerves reddened.

3. The softening of the medullary matter observed in the further course of the disease explains the torpidity of the whole frame, the somnolence, which the author ascribes to the occurrence of serous effusion, and the changes in the organic conditions of those secreting organs which are under the influence of the gangliar nerves, deriving their branches from the spinal marrow.

4. The course of the symptoms leads to the same conclusion. Its first operation is on the innermost recesses of the nervous power, latterly on the fibrous and serous coverings of the central part of the nervous system, and on the nervous sheaths.

These considerations lead him to question the propriety of the denomination abdominal typhus; since the disease is seated, according to this view, rather in the spinal marrow and the nerves thence proceeding, than in the intestinal canal. That the latter organ is disordered cannot, he argues, excite wonder, when it is remembered, that, with a circumscribed and altered nervous influence at the commencement of the disease, it contains the usual quantity of food which it can no longer properly elaborate, and the biliary secretion must be also deranged by the deranged nervous influence. While he allows, therefore, that the lesions of the alimentary canal may be ranked in the list of the most usual and also the most dangerous complications, he cannot admit them as original, and the most important morbid phenomena.

The name typhus also he regards as little adapted to this disease, since the somnolence and stupor are not so intense as they are in ordinary typhous fever; and he is therefore partial, on several accounts, to the old name of nervous fever.

These views are not only ingenious, but, on the whole, they seem in many respects sound. We believe that none who have been accustomed of late years to inspect the state of the spinal chord and its nerves in fever can deny the great share which the morbid state of that part of the nervous system performs in the production of the symptoms. Whether its morbid states invariably and actually exercise on the intestinal mucous membrane, the influence represented to be exercised on it by Dr Grossheim, must be determined by future inquiry.

It must at the same time be observed, that this theory, advanced by Dr Grossheim, is chiefly a modification of that entertained by Schonlein, who places the incipient derangement of the disorder in the gangliar system, and its roots and branches entirely. The latter idea is also the one maintained by Dr Ebel, who thinks that the disease consists originally in a peculiar lesion of the vegetative or gangliar nervous system, but that with this may be combined some specific matter, we suppose poisonous, partly through the season of the year, partly by the water used for drink ;—and that this distemper of the gangliar system, by its reaction on the organic processes, and especially sanguification, may alter so much the constitution of the blood and the fluids, as to induce, by their irritative qualities, the irritation and ulceration of the intestinal canal. Actual inflammation of the mucous membrane, he allows, does not constitute the essential source of its origin. The disease he regards as of the nature of gastric nervous fever, which has its origin in the gangliar system, with peculiar affection of the cerebral system, from which he conceives the typhous symptoms proceed.

The whole of these explanations concur in proving one thing, viz. the extreme difficulty of explaining all the phenomena of this disease by any one of them.

VIII. *Etiology.*—With regard to the remote causes of this disorder, we find more agreement, but not much specific information.

All the authorities agree in ascribing considerable influence to the season, the weather, and other meteorological peculiarities, —with the exposure of the individuals to its vicissitudes. Thus, in the case of the two companies of the Grenadier Regiment, the military duties and discipline, and the bivouac in the open air, at an early and rather unsettled season, seemed to have some influence. In the case of the Stangenrod epidemic, a dry spring, followed by a dry stifling summer, with insufferable heat, continuing to autumn, without rain and with little wind, alternated with cold nights in July and August; and these causes, Dr Ebel conceives, were sufficient to increase the disposition to gastric nervous fevers, irregularities in the portal vein, the spleen, and liver.

A still more important place in causation is assigned to the nature of the food and drink. Dr Grossheim, indeed states, that it was difficult, if not impossible, to ascribe any deleterious influence to the food of the soldiers, because the meals were prepared with the same care, in the same utensils, and with the same water as at other times, when both companies enjoyed the best health. Those articles of food which were not supplied under the immediate control of the military boards, viz, the eatables from two victual stores furnishing breakfast and supper to the soldiers, as sausages, lard, cheese, herring, butter, and fat, were subjected to careful examination, without any thing hurtful being detected. Professor Mitscherlich examined the brandy, and found in it no trace of any thing injurious to the health.

From these circumstances, Dr Grossheim felt himself obliged to look for the cause of this epidemic in the violence and continuance of the military exercises, and the necessary exposure to great cold after being overheated by violent and laborious corporeal exertions. Among the patients themselves, he adds no opinion was formed as to the occasion of their being attacked with sickness; as is usual among the frequently prevalent diseases of the same kind.

Notwithstanding the malignant character of this disorder, it showed in its origin and progress no contagious property, neither in the barracks nor in the lazaret. The cases in the former took place in the same proportions in the different chambers, and almost always together; and if in some of the apartments, during the course of the epidemic, individuals were attacked in greater numbers, the circumstance cannot on that account be viewed as a proof of the contagious nature of the disease, because no patient was left so long in the barrack, that his disease could have attained the intensity requisite for the developement and maturation of the supposed contagion. In the lazaret no separation between the patients attacked by the prevailing disease, and the others was observed. On the contrary, convalescents from other diseases, and out-patients distributed among them, remained altogether free.

Dr Ebel is of opinion, that a circumstance, which was principally concerned in the developement of the disease of Stangenrod, consisted in the entire want of good fresh water, and the use of corrupted water. The inhabitants of the village used for domestic purposes marshy rain water, received in insufficient reservoirs, and which stood till it was required, and not unfrequently their drink was a decoction prepared from unripe dried fruits. The food consisted of unripe fruit, or an indigestible mess of potatoes and pulse; and if to this be added the distress and anxiety, the filth and impurity among the lower classes, he thinks it is not difficult to account for the origin and prevalence of the disease.

IX. *Treatment.*—On the subject of treatment we believe it will not be necessary for us to dwell. Notwithstanding the judicious conclusions formed on the pathology and nature of the disease, the therapeutic measures do not seem so well calculated to remove or allay its symptoms as might be expected. There is a want of simplicity, and some want of energy and method in the arrangement of the different therapeutic measures; and we confess we should not anticipate much benefit from the decoctions of althæa, or infusions of the flowers of verbascum, lime tree, or elder flowers, which were employed in the treatment both by Dr Grossheim and Dr Ebel.

The therapeutic measures laid down by the former are certainly distinguished by a greater degree of method and energy than those adopted by the latter. The individual remedies were blood-letting, general and local, by means of leeches, emetics, cathartics, especially calomel, sugar of lead, vegetable charcoal, emulsions and mucilaginous medicines, acids, cold water, wine, and diaphoretics.

General blood-letting was practised pretty often among the young soldiers whose constitutions were robust. The effect of great venesections, however, he says, was never favourable; and latterly, when blood-letting was requisite, he never carried it beyond six or eight ounces.

Leeches applied over the belly, and especially to the cæcal region, were much used, and with good effects. The blood drawn by from ten to thirty leeches, which was equivalent to a small blood-letting, was often attended with very beneficial effects in abating abdominal uneasiness, and reducing the general intensity of the symptoms.

Emetics at the onset of the disease, when their employment was indicated by the presence of *sordes* in the first passages, were in several cases very beneficial; in some cases they evidently cut short the disease. In the majority of cases, however, they seemed not to operate favourably, as they increased the congestion towards the head and chest, and induced somnolence and bloody expectoration. It is also observed that by their use the diarrhœa was aggravated.

Among cathartics Dr Grossheim employed calomel principally. When loose stools were present, and the epigastric region and the right side under the ribs were painful, he exhibited two or three doses of calomel of two grains each, in order to relieve the congestion of the liver. These were followed by two or three semifluid motions, with alleviation of the uneasiness and oppression; but the disease proceeded to its usual developement.

Calomel in large doses, viz. ten grains, three or four times daily, at the height of the disease, when diarrhœa was prevalent, increased, diminished, or did not affect the number of motions, but in all cases was followed by the secretion of a thin fluid, dark or black, increase in the tympanitie state of the intestines, sinking of the strength, and increase of the sensibility and pain in the cæcal region. The termination under this mode of treatment was usually unfavourable, whether the given portions of the remedy were administered in one day, or repeated for several days; and the few recoveries which took place under this method, he regarded as the triumph of the healing powers of nature, not as the consequence of the efforts of art. So thoroughly is he convinced of the truth of this, that he declares he will employ mercury no more.

This conclusion, deduced from pretty extensive experience, may be properly employed to counteract the tendency of the therapeutic method recommended by Dr Frenzel, who has so high an opinion of calomel that he exhibited it latterly in doses of ten, twenty, and thirty grains, because he conceived it to possess sedative powers in regard to the intestinal mucous membrane. On the physiological properties of this mineral, and its effects on the intestines, medical opinion is still at variance. But we believe that, upon the whole, the conclusion of Dr Grossheim as to its therapeutic effects, which accords with the opinion of Twining and others, is well founded.

Acetate of lead had the effect of diminishing the number of motions without affecting the tympanitic distension, and without producing any substantial improvement.

Vegetable charcoal, given in doses of from two to three grains every two hours, had no influence on the disease. Though we cannot say that we should have expected from it much benefit, it appears that the doses were unusually small.

Under the head of diaphoretic measures, he properly mentions the tepid bath as of the greatest benefit, especially when associated with cold affusion upon the head and spine.

We need not occupy the time of our readers in enumerating the remedies employed by Dr Ebel.

It may be doubted whether any remedies, except the local detraction of blood by means of leeches, exercise much effect on this disease. But if the views of Dr Grossheim regarding the influence of the spinal marrow and the state of its emergent nervous branches be well founded, the proper place for the detraction must be along the course of the spinal column, especially in the lumbar region. Cupping over this part to the extent of eight or ten ounces seems more properly calculated to deplete and unload the rachidial vessels, and thereby prevent intra-spinal effusion, and softening of the spinal marrow in its lumbar region, than depletion by leeches applied to the belly. Does it not also seem requisite, we would ask, to evacute the lower part of the intestines daily at the beginning by the emollient or laxative enema, and then to employ afterwards, as circumstances indicate, emollient injections, as mechanical detergents and soothing applications?

Art. IV.—*Medécine Legale, &c.—Legal Medicine in reference to the Insane, and the Deaf and Dumb.* By J. C. Hoffbauer, Doctor in Law and Philosophy, Professor in the University of Halle. (Translated from the last German edition, by A. M. Chambeyron, D. M. P. Interne of Salpêtriere; with notes by MM. Esquirol and Itard. 8vo. Paris, 1827, Pp. 388.)

In fulfilment of the promise made in the last Number of this

Journal, we proceed to give an abstract of Dr Hoffbauer's treatise. This work, though occasionally displaying a want of practical knowledge of insanity, and a degree of metaphysical refinement, which, however agreeable to those who delight in the subtleties of German metaphysics, is apt to convey to most readers an impression of vagueness and obscurity, is of very great value, containing, as it does in a systematic form, the results of much reflection and accurate observation, by one who has devoted his life to the investigation of this and other subjects of a kindred nature.

In giving the following abstract of Dr Hoffbauer's views of the various shades of mental incapacity, and the legal rights and responsibilities of each, we beg the reader to bear in mind that they only afford a scale to which approximations may be made, and that it is by no means to be expected that individual cases can always be referred to it with precision.

Two conditions are necessary for the sound and active exercise of the intellect,—the careful examination of the data on which the judgment is to be founded, and the careful consideration of *all* these data,—in the language of our author *intensity* and *extensity*. Deficiency of the former characterizes imbecility, that of the latter stupidity. The stupid man is more apt to form a false judgment than the imbecile, who with difficulty comes to a conclusion. The false judgment of the former is the result of his neglecting some of those considerations which ought to have formed the grounds of it, and hence he is apt to excuse himself by saying that he did not think of it, or rather that he would never have thought of it. The imbecile, on the other hand, finds the most easy problem difficult. The error of the stupid man may be rectified, especially if a single reason or fact be adduced against it, but those of the silly are not so easily combated, on account of the difficulty of fixing their attention even upon a single object. Stupid people in abandoning an error often fall into the opposite extreme, and thus from the blindest confidence pass to the darkest doubts, from inability to view a question in more than on one side, and from the embarrassment which every complex idea occasions them. Between the stupid and the silly there is a marked difference in respect to memory. In the latter it does not appear to exist, while in the former, circumstances are recollected individually, though never collectively. This depends upon attention. The better a subject is understood the more easily is it remembered, and a subject can be comprehended only in proportion to the attention bestowed on it. Thus the stupid man who has the power of fixing his attention on at least one circumstance will recollect it, while the silly, from inability to do this, will easily forget anything presented to his notice.

Weakness of intellect is still further manifested both in the stupid and the silly, by a disposition to talk to themselves when they fancy themselves alone. Language may be used not only for the communication but for the fixing of ideas. And when the mind is feeble the words connected with the ideas floating in the mind must not only be represented to it, but pronounced more or less distinctly. To this view M. Esquirol, in a note, objects that it implies a degree of calculation inconsistent with weakness of intellect, and denies the tendency to talk when alone to be a mark of it, considering it rather to denote momentary excitement, and to be had recourse to by the individual for the purpose of ridding his mind of that which oppresses it. In illustration he cites the cases of the poet during the period of his inspiration, of the maniac expressing hurriedly the ideas which rapidly and irregularly present themselves to his mind, and of the monomaniac giving utterance to the various ideas associated with the morbid one which ever occupies his attention. These illustrations, adduced by M. Esquirol, in our opinion, militate against his views. The rapidity and intensity with which the ideas of the poet and the maniac are presented to their minds, may force them, for the purpose of fixing them, to do that which on other occasions those of feeble intellect have recourse to, to give utterance to them. Neither wishes to get rid of the ideas presented to his mind; the object of each, on the other hand, is to fix them, as the contemplation of them is a source of satisfaction, if not of happiness. But Dr Hoffbauer does not assert that the disposition to talk when alone is a mark of feeble intellect only. He mentions it as a concomitant, and his explanation of the phenomenon evidently shows that it may occur to any individual of any degree of intellect, however high, when the train of thought excited in his mind is such as to render attention to the component parts of it difficult. Something of the same kind is observable in the case of the clown in his attempts to derive amusement from a book. It is not enough that he casts his eyes upon the words; he must pronounce each of them, otherwise they fail to communicate to him any information.

To return to the comparative view of stupidity and imbecility. The silly not only are sensible of their imbecility, but frequently exaggerate it, while occasionally the stupid man considers himself to be remarkably intelligent. This may be accounted for by the fact, that the latter, being able to fix his attention on one subject at a time, may conceive his mind by no means inactive, while the former, being unable to arrive at any conclusion, is incessantly impressed with a feeling of his own weakness. One result of this is, that the stupid man is apt to act too precipitately and without reflection, while the other remains undecided on the merest trifles, from a fear that the result may not be what he contemplated. It frequently happens, too, that the latter is timorous in the extreme, and even misanthropical, not only from the conviction of his own weakness, but from his having experienced in a disagreeable manner the superiority of others. In such cases he is apt to abandon himself blindly to individuals whose kindness he has felt, or who appear to take an interest in him. Both the silly and the stupid are devout, so to speak. In the display, however, of the religious sentiment, there is a considerable difference between them. In the devotion of the former, to which he has recourse as a refuge from the supposed contempt and ill treatment of his fellows, fear and indecision are exhibited, while the latter attaches great importance to his religious performances, and conducts them with great pomp and ceremony, believing that he is thereby conferring a favour on the Deity.

Strictly speaking, from the limited nature of the human mind, no one is absolutely free from stupidity or imbecility, but these states must be very decided, before they can be taken into account in the application of laws and civil institutions.

Dr Hoftbauer recognizes five different degrees of imbecility, and three of stupidity. The first degree of imbecility is characterized by inability to judge of objects, even when the necessary data are furnished, and the thing presents no difficulty in itself. The individual may form an accurate enough judgment regarding matters with which he is daily familiar. His memory is very limited, not precisely from his forgetting circumstances, but from his being unable to apply them to his purpose. The decencies of his station are scrupulously maintained, and when he is avaricious, he is more fearful of losing than desirous of amassing. He is not given to talking to himself, because his usual occupations require little expense of thought, and though subject to ebullitions of passion, they are as easily quieted as excited.

In the second degree of imbecility, the patient is able to judge and act in matters which are familiar to him, but is frequently deceived from absence of mind, to use a familiar expression, which makes him forget places, times, and circumstances. He observes so little what is passing around him, that he often believes himself in places different from where he is, takes strangers for people of his acquaintance, and fancies himself at home when in the house of another.

In the third degree of imbecility, the individual is unequal to any business requiring more than mechanical action, but has sufficient understanding left to feel both his own weakness and the superior mental power of others. Hence there is that tendency to devotion and misanthropy already alluded to. His mind not being altogether inactive, though capable of no great exertion, he talks to himself, and, from not sufficiently grasping an idea, his memory is very defective, and he passes rapidly from one subject to another. Irritable and very susceptible, he sees insults and injuries where they do not exist, from his being exposed to ill usage, and still able to resent it.

The fourth degree of imbecility is distinguished by complete prostration of the understanding and memory, by a deep insensibility, which nevertheless leaves the patient a confused idea of his weakness, and by a passionate desire for stimulants.

In the fifth degree of imbecility, the intellect, attention, and memory are gone, and of course with these all the faculties depending upon them. The patient is incapable of any emotion, and nearly insensible to pain and physical inconveniences. Food is taken only when given him like a child, and the natural wants scarcely affect him. He does not talk to himself like those affected with the other degrees of imbecility.

Stupidity, generally speaking, is a less serious affection than imbecility, though the highest degree of the latter is less serious than the greatest degree of the former. The three degrees which Dr Hoffbauer has distinguished it are thus characterized. In the first, the individual is incapable of judging and determining only when he has to weigh opposite motives, when feeling his own incapacity, he has recourse, unless prevented by self-esteem, to the superior intelligence of another, and any absurdity of conduct will in most cases be found to arise from the application of a rule, good in itself, but which ought not alone to have been taken into account. In the second degree of stupidity, a person may form a correct and sufficiently prompt judgment regarding his daily affairs, but commits serious mistakes when any force of judgment is required. He is embarrassed by a long train of reasoning, if it be at all complicated. His memory is perhaps faithful, but slow, and he expresses with difficulty any complex idea, which is the result of his own reflections, and not received from another. When his faculties are a little developed by education, he is the partisan of every thing which is good in theory so to speak, but useless in practice, because he cannot observe those circumstances which distinguish particular cases, and estimate them at their proper value, both of which are necessary for the proper application of general rules. In the third and highest degree of stupidity, the patient never gets beyond a single idea. When another is suggested to him, he loses sight of the first, and since judgment depends on the comparison of several ideas, he is as incapable of judging as a man who is imbecile. Those whose stupidity approaches to the third degree express themselves by half-uttered words, incessantly revert to the same idea, and give utterance to their thoughts by short, unconnected, incomplete phrases, announcing for instance the subject and the attribute, without connecting them by an affirmative or a negative. Instead of saying the rose is beautiful, they will say, *rose beautiful*, or perhaps simply, *rose* or *beautiful*, according as the subject or the attribute happens to make the greater impression. Frequently too, they reverse the natural order of the words, saying for instance, *rose, beautiful, it is*, as if perceiving an omission which they wished to rectify, the attempting which only increases the confusion. We agree with the French translator of Dr Hoffbauer's work, that such forms of expression are frequently met with in individuals who are by no means deficient in intellect, and who make use of them either from a habit of carelessness or of speaking too rapidly. In large towns, especially in Paris and London, this is often observed.

In a medico-legal point of view, the first degree of imbecility may be ranked with the second degree of stupidity, and the third degree of stupidity with the third of imbecility. When the imbecility of a patient amounts or approaches to the third degree, legal responsibility is destroyed, because the complete or nearly complete absence of intellect destroys all culpability. But society and the patient himself must be protected from those troublesome consequences which might result from his condition. Imbecility in the first or second degree may either destroy or lessen culpability, or leave it unaffected, according to circumstances.

The circumstances on which culpability depends require examination. To render an individual culpable for any action, it is necessary, 1*st*, that he should be aware that the act is contrary to law, or if not aware of it, that his ignorance should be his own fault; and 2*d*, that he should know that the act is precisely that which is forbidden by the law. Ignorance of the law or of the illicit nature of an action may be alleged as excuses in imbecility of the first degree, but they can be reckoned valid only when the law violated by the imbecile does not form part of his own general relations, or of those of the community, and the action forbidden is not contrary to the natural law. The second degree of imbecility may lessen or destroy the culpability of an action in circumstances in which the first degree would have left it entire.

It is necessary here to notice the distinction made by jurists between *dolus* and *culpa*. When an individual, otherwise responsible for his actions, commits a crime or offence which he knows to be forbidden by the laws, it is *dolus*. If at the moment when the act was committed, he had not a sufficient notion of the effect of it, and if it was no fault of his that he had not such notion, it is *culpa*, provided always that ignorance of the law be not the cause. *Culpa* consists in a defect of attention which could not be avoided. This defect of attention is called thoughtlessness, inconsideration, or imprudence, according to the circumstances in which it was committed, and its possible and probable consequences. Lawyers recognise three degrees, *culpa lata*, *culpa levis*, *culpa levissima*. The fault in general is called *culpa in abstracto*, in any given case it is named *culpa in concreto*. The standard of comparison in the first is that ordinary degree of attention of which the mass of mankind is susceptible, in the second it is the particular measure of the faculties of the individual or his defect of capacity. Thus where the fault *in abstracto* attains a certain degree, the fault *in concreto* may exist in a superior or inferior degree, or not at all.

In the first degree of imbecility, inattention, distraction, &c. must be regarded as culpable, when they occur in relation to objects known to all the world, as fire, or to those with which the imbecile is familiar, as the instruments of his profession. In all other cases, the fault, so far as he is concerned, loses the degree of its culpability *in abstracto*, or its culpability altogether. This is also the case when his acts are the result of sudden anger or fear, because he is from his condition more liable than another to loose his presence of mind.

The man who is imbecile in the second degree exhibits a great defect of attention, which is most frequently the result of his defective memory. He forgets what he has just done, is more easily disconcerted when under the influence of his passions, than the individual who is imbecile in the first degree, and from his incapacity is more exposed to ill usage. His responsibility then, *cæteris paribus*, ought to be less.

The preceding considerations are applicable to stupidity which has passed the second degree. Individuals in this state being incapable of extending their thoughts simultaneously to different objects, necessarily neglect a number of considerations which an intelligent individual would keep in view. They are the less responsible for their actions, from their being incapable of recognising their want of affection or correcting their mistakes.

Civil law takes weakness of mind in an individual into consideration, both in reference to a given act, and to the general management of his affairs. In the first case the state of the person at the moment of the transaction must be determined, in the second whether the affection can be looked upon as momentary, or as susceptible of being prolonged for a longer or shorter time. Civil justice interferes with the private actions of a man, when they injure the rights of another, in which case recompense may be required, or when by his actions or will, a right is acquired by another. But recompense or indemnity can be exacted only when the agent has been sensible that his action was contrary to law, and at the moment of committing it had a sufficient notion of its nature; and a right can be acquired by one party, only when the other party has the free use of his intellect to direct his will, it being understood that inability to direct the will cannot be pleaded when this is owing to his own conduct, as in the case, for instance, of intoxication. The principles applicable to ignorance of the law in criminal cases hold good in civil. In the second or third degree of imbecility, ignorance of the law may be pleaded as an excuse in the circumstances already mentioned.

The measures authorised or prescribed by law, regarding the imbecile, being founded on their own interest or that of others, and having for their object, the security of either party, consist, **1st**, in the appointment of a *tutela* for the management of the property of the patient, or a *curatela* for the care of his person; **2d**, in seclusion to prevent those dangers which might ensue to himself or society, from the unlimited enjoyment of personal liberty. All these measures must be taken as mildly as is consistent with perfect security.

A patient in the third, and *a fortiori* in the fourth degree of imbecility, cannot be entrusted with the administration of his property. But in the appointment of a *tutor*, regard must be had to the degree of the necessity, and more especially to the peculiarity of the character, inclinations, and habits of the individual. It must be considered whether he be likely to commit acts which, though indifferent in themselves, may give public offence, or whether, from ruinous liberality or prodigality, he be liable to dissipate readily the property left to his disposal.

Though a man afflicted with the second degree of imbecility may be intrusted with the management of his affairs, a guardian may be appointed for him in particular circumstances, as when his character requires such a measure, or when more or less complicated interests are involved, requiring an experienced mind and constant attention. Except in such circumstances, however, he ought not to be deprived of the management of his property, especially as all men are very attentive to their interests, and contingent inconveniences cannot be compared with those connected with tutelage. But though persons so situated ought not in general to be placed under a *tutor*, they frequently require *surveillance*, from their being more apt to act without reflection than those afflicted with the first and third degrees of imbecility, the former being rather too circumspect and irresolute, the latter inactive and negligent. Individuals who are imbecile in the first degree cannot be subjected to tutelage or surveillance except when their inclinations, habits, family, fortune, or the affairs which they have to manage render it necessary.

The principles now laid down are, with necessary modifications, applicable to the various degrees of stupidity, it being borne in mind that persons so circumstanced are more liable, as already mentioned, than the imbecile, to commit rash and imprudent acts. Those afflicted with a degree of imbecility or stupidity, which renders it necessary to place them under tutelage or surveillance, can be neither tutors nor curators, and even when their state does not require such measures, it would be better that the law declared them incapable.

Patients imbecile in the third degree are incompetent to make a will, their actions being unreasonable, or at least without reflection. But those in the first or second degree, though subject to a *curatela*, are not deprived of this power. By their will they may possibly deprive of something those who would have inherited *ab intestato*, but they take from them no formal right, and, besides, the making of a will does not require the same measure of intellect which the management of property does. A single arrangement only is required, for which the testator has sufficient time.

Passing over the section on the mode of ascertaining the existence of weakness of mind, and which contains little or nothing which is new, we come to the section on mental illusion (Wahnsinn). According to Dr Hoffbauer, mental illusion consists in a vicious relation between the senses and the imagination, by which the patient is led to mistake the creations of the latter for real objects perceived by the former. To this definition M. Esquirol objects that two phenomena are confounded in it,—the one a true error of sensation consisting in a vicious relation between the senses and the imagination, or rather the understanding; the other the result of an exaltation of the imagination, by which the patient is led to mistake the creations of this faculty for real objects perceived by the senses. The former are illusions of the senses, the latter hallucinations. In the first instance the senses are primarily affected. Thus an insane patient mistakes a window for a door, passes through it, and is precipitated to the ground. Clouds are supposed to be an army in battle array, and many other strange mistakes are committed, which are referrible to the same cause. In hallucination, again, the patient's imagination is alone affected, and the senses take no cognizance of what takes place. Hallucination accompanies every species of insanity, and especially monomania, of some varieties of which it is the only characteristic. Begging the reader to bear in mind this distinction, and that from the erroneous view now pointed out, Dr Hoff bauer's remarks are so far confused and inaccurate, we proceed with our exposition.

According to the definition of mental illusion given by the author, he conceives it to depend on exaltation of the imagination or weakening of the senses. Patients who imagine that they see apparitions, or that they have glass feet, &c. owe their disease to the first cause. The disease originating from the second cause differs from that now mentioned in the wanderings extending from one subject to another without any apparent connecting link, being as independent of each other as dreams. This is frequently accompanied by a weakness of intellect approaching to imbecility. Various senses are simultaneously affected, and the imagination being weaker than that of a sound individual, the illusions can be founded only on the weakness of the senses. This is particularly apparent in a peculiarity observable in this species of mental illusion. The patient is carried back to past epochs of his life, mistaking objects and individuals for those with whom he has been formerly connected, either from paying little attention to the objects which surround him, or from those objects being metamorphosed in his eyes as to prevent him from forming any exact idea of them. He has consequently no consciousness of his actual state.

A sound judgment is compatible with mental illusion depending upon exaltation of the imagination, and experience proves that men endowed with superior talents and active imaginations are the least secured from this affection. Hence many so situated not only judge correctly regarding matters unconnected with their dominant idea, but draw from this idea conclusions so rigorously logical, that, were the premises correct, they would be taken as proofs of remarkable intelligence.

Dr Hoffbauer hence concludes, that this form of mental illusion may be divided into two species, the fixed and the wandering. In the former the predominant idea is always either gay or sad. It is not always continued, but sometimes intermittent, in which case it is said to be periodical. The period of intermission is called the lucid interval, to constitute which the patient must be in a state to recognize the absurdity of his predominant idea, and be no longer haunted by it. The duration of such lucid intervals varies.

When mental illusion is caused by exaltation of the imagination, there is always one exclusive idea, and the patient is really insane only in those circumstances in which this idea comes into play. In other respects he is sane, and hence his civil acts ought to be valid, and his criminal punishable, there being no reason why a man who, for instance, believes his feet to be made of glass, but in other respects is perfectly reasonable, should be incapable of entering into a civil contract or go unpunished for his crimes. In criminal cases, the dominant idea of the individual ought to be considered as true, in other words, his actions ought to be judged of precisely, as if he were in those circumstances in which he believed himself to be. If these circumstances do not alter the nature of the offence, his culpability and responsibility remain. But if they lessen or destroy the culpability, the patient can no longer be held responsible. From what has been said, it will be evident that it is most important to recognize the nature of the predominating idea, and to determine how far it influences the intellect of the patient, his actions in general, and the idea which he forms of himself and his relation to others. If this idea derange the whole intelloctual faculties, the state of the patient may be assimilated to various degrees of weakness of understanding. He no longer judges rationally of any thing, because he takes no interest in any thing, except the object of his fixed idea in which he is always irrational. When this state is prolonged it assumes all the characters of imbecility. What has now been said is applicable to simple melancholy. But if the intellect is disordered in respect only to a certain number of subjects, the principles already laid down are applicable to the case.

When mental illusion produced by an error of the senses affects an individual who labours under false notions of himself and his relation to others, this peculiarity ought to be taken into consideration. The writings of physiologists and physicians abound with instances of individuals who believed themselves to be exalted personages. The acts committed by these beings ought to be judged, not by their intrinsic nature and importance, but by that by which they would have been characterized, if committed by a person in the situation in which they supposed themselves to be.

In criminal law, it is necessary to take into account the dominant idea, and the error into which the patient may be led by considering the acts which he is impelled to commit as duties. Error based on the religious sentiment merits special attention. Insane patients thus affected, perform acts which they believe to be enjoined by their creed or by the Deity himself. No human punishment will turn such individuals from their course, because they fear the wrath of heaven more than the inflictions of man. The hope of eternal happiness makes them brave the most painful punishments, and the more severe and inevitable they are, the more their predominating error is strengthened by the notion that they are suffering for the love of God. Such individuals are irresponsible for their acts, but, both for their own security and that of the public, they must be subjected to restraint. In respect to other questions, the principles held in regard to illusion arising from exaltation of the imagination are applicable to this species.

Passing over the author's observations of the means of ascertaining the existence of mental illusion, we come to the chapter on mania, and analogous affections. Some writers regard mania as a species of mental illusion, others as a mere state of the same disease. The two affections ought not to be confounded. Dr Hoffbauer defines mania to be a state in which reason is too weak to prevent acts of violent fury, and others to which the patient is impelled against his will. In this definition the author confounds mania with fury, a state to which all insane individuals are liable, but which is not necessarily an accompaniment of mania.

Mania may exist without mental illusion, being, according to the author only a species of mental exaltation, in which reason has lost its power to control the passions and the acts by which they are manifested, the patient being unable to repress the one, or abstain from the other. It does not follow that his senses are affected or even his intellect, because to resist the impulses of the passions, there is a necessity not only that reason should advise, but that there should be force of mind to follow its dictates, and daily experience proves that the first may exist without the second, and that men, despite their good intentions, may be hurried away by a violent passion. On this M. Esquirol remarks, that the exact consciousness of the motives which a man has in performing an act can no more be reckoned the will to do so than the will itself can be taken for the deed, otherwise there would be a strange abuse of words. For the performance of any action motion is requisite. But every movement executed by the muscles of animal life is either convulsive or voluntary. Are the acts of maniacal patients then, convulsive? Certainly not. Such unfortunate individuals have always motives for their actions which they frequently avow. In the most violent paroxysms they may be calmed by threats, kindness, or a jest, and in the most difficult cases, it is possible, by using energetic moral influence, to arrest their attention, and cause their exaltation to cease. It follows, then, that maniacal patients can change their resolutions.

The remarks of the author on mental exaltation are, according to him, applicable to mania, which is one species of this condition. The maniac may form a sane judgment of his actions without being able to repress his passions, or to abstain from those acts of violence to which they prompt him. Mania may also arise from weakness of the intellect, and in such instances, which are by no means rare, the patient is deranged not from inability to follow the dictates of reason, but from that faculty not being in a state to advise. Mania thus depends either upon weakness of reason, or force of passion, and to these may be added irritability. In the first instance, the patient, from deficient intellect, cannot repress his passions, and the affection may be denominated stupid mania. In the second he is hurried away by them against his will, and even in spite of the knowledge which he possesses that his actions are wrong, and this may be called extravagant mania. Paroxysms of fury in mental illusion do not prove the existence of mania. A merchant, who took it into his head that he was a king of Spain, became furious when he was not treated with the deference suitable to his imaginary dignity. The fury of this individual was no proof of mania, for if his opinion had been correct, nothing could have been more natural than his conduct.

The distinction of mania into stupid and extravagant is applicable to every species of mental exaltation, inasmuch as this affection is always founded on intrinsic weakness of reason, or absolute force of passion.

In stupid mania, all the passions of the patient have full scope, and the excitement is more or less general from the reason being as powerless against one passion as against another. The patient hence abandons himself to all his propensities without the slightest restraint. Nothing can stop his paroxysms, except the fear of immediate evil, which may intimidate him for the moment. Sometimes he is blind to immediate danger; because he has not sufficient intellect to perceive and comprehend what passes under his eyes, and hence any fear with which he may be inspired is purely animal.

When mania is caused by psychological excitements of the passions and irritability of the patient, its more immediate cause is to be found in the physical temperament or certain affections of the mind producing frequent fits of anger. In all other respects, the maniac may be able to control his propensities and actions, and to judge and act rationally. He is deranged in those circumstances only which lead to a paroxysm of fury; and his erroneous conclusions are more frequently the consequence than the cause of his passions. He is often very attentive to external decorum, from being governed by extravagant self-love, which, from the slightest circumstance, produces a paroxysm, no passion exciting anger so much as pride and self-love.

Mania produced by the force of a passion is frequently directed to a single object and every thing connected with it, the patient in other respects judging and acting rationally. His fury is sometimes directed against himself, not from the insanity which animates certain suicides, but in order that he may wreak his vengeance as far as possible. He often displays in the performance of a deed for which he is afterwards tried, a force of resolution and a sagacity which would incontestibly militate against the supposition of insanity being present, if to have a sound judgment, and to possess self-control were the same thing.

This species of mania is always founded on resentment against some one, occasioned by an injury which the patient will not mention before he has revenged himself, and which he would willingly conceal from himself. This resentment is manifested by a fury easily excited, by which the patient seems to free himself from a load which oppresses him. He can repress his fury when he perceives that he has missed his object, perhaps from a fear of losing his revenge, if he should unreservedly abandon himself to paroxysms of violence, and he will show himself to be perfectly rational, exhibit no appearance of insanity, and do nothing to attract attention. By-and-by he manages to escape, reaches his family in the evening, appears perfectly sane to all who see him, but during the night murders his wife and children.

In mania a weakness of intellect and a proneness to anger, arising from different causes, but reacting on each other, are often met with. When the maniac in such cases cannot immediately accomplish his purpose, he exhibits afterwards astonishing prudence and sagacity in the execution. When it is founded on resentment, it sleeps, so to speak, till the opportunity for vengeance is offered.

The other species of mental exaltation are as numerous as the passions which produce them,—some owing their origin to moral causes, as the passion for gambling, and others to physical, as *furor uterinus.*

In his remarks on the legal consequences of mania, Dr Hoffbauer promulgates some strange doctrines. He states that the impulse which has impelled a maniac to the commission of any deed may be estimated by the severity of the punishment annexed to it, and the degree of certainty of its immediately following, forgetting that, according to his own definition, as M. Esquirol well observes, mania being an irresistible impulse to commit acts of violence, the force of this impulse must be estimated not only by the severity and imminence of the danger, but by the nature and importance of the motives of the maniac, the impression which they make upon him, and the degree of energy with which the severity and imminence of the punishment are presented to his mind. From such variable data it is impossible to make any accurate or proper calculation.

Dr Hoffbauer asserts, that when mania is complicated with mental illusion, the legal consequences are the same as in the latter, but different when such a complication does not exist. In the latter case, no question, he conceives, can be raised, respecting the consequences of the actions of the maniac, except where they prejudice the rights of another, because he does not see how a man whose intellect is in no respect weakened should be incapable of entering into a contract. Now, according to the author's definition, passion may blind a maniac so far as to cause him to commit murder, and yet we are not to suppose that it will make him sign a contract, which may beggar himself and his family. But though the intellect of such a patient may not be in reality weakened, it is perfectly evident that it is comparatively weak from the greater power of passion.

Dr Hoffbauer next proceeds to inquire if there be an obligation on the part of the maniac to indemnify an individual for any loss of which he may have been the cause. If insanity amount to such a degree that the patient is no longer master of his actions, he is neither culpable, nor liable to damages for them, but the authorities must take measures to secure himself and the public from all consequences. In cases of doubt, the author conceives that a middle course ought to be pursued, and that the individual being made liable in damages for his actions, should be left at liberty; it being understood, that he is still to make compensation for new injuries, or be confined if necessary. This mode of treatment is the best adapted to the situation of the unfortunate individual, as it is a main point in the psychological treatment of mental alienation to make the patient acutely sensible of the consequences of his acts, and these as immediate results.

This appears to be an erroneous view of the case, for as M. Esquirol has remarked, the judge is not called upon to treat the patient's disease, but to act for his interest in a pecuniary point of view, and to secure society from the consequences of his acts. An insane patient must, undoubtedly, recompense the individual whom he has injured, but is it right to expose him to the risk of being called upon to pay damages anew? May not unprincipled individuals lay snares for him, and hurry him into acts for the purpose of profiting by them, to the damage of himself and his family? Although it be right that an injured individual be recompensed for the damage which he has received at the hands of an insane person, it appears to us to be the most rational as well as the most humane course to prevent the latter from having it in his power to repeat the evil.

To proceed with Dr Hoffbauer's opinions; though the highest degree of mania destroys all responsibility, inferior degrees may not even lessen it. In this respect we must attend to the following considerations: 1*st*, Penal laws are instituted to prevent certain acts, the punishment attached to which ought to be considered as a more or less distant consequence. It must therefore be ascertained whether the impulse actuating the maniac be too powerful to be counterbalanced by the fear of punishment. 2*d*, Paroxysms of mania always produce a certain alteration of the intellect, and the patient, therefore, loses, either wholly or partially, the exact consciousness of himself, and is placed in an involuntary state of inattention or irreflexion, by which he is rendered incapable of forming such a conception of an offence as would prevent him from committing it.

When the maniac cannot form a precise notion of the consequences of his actions, nor be deterred from them by the fear of others, all responsibility ceases. In the opposite case, though the degree of the disease renders it difficult to resist the impulse, the punishability ought to be increased, however paradoxical at first sight this may appear. The punishment being the force by which the law opposes the impulse to commit acts which it condemns, it follows that the penalty to be efficacious ought to be increased in proportion to the energy of the impulse. This rule, however, is applicable only when the individual at the moment of acting is fully conscious of his present state. But this is a problem very difficult to solve in practice.

If it can be demonstrated that the maniac at the moment of acting was unconscious of his state, the act must be considered not what it really is, but what he believed it to be. In illustration of this, the author gives the case of a man sixty-three years of age, who, being extremely ill used by his son, a lad of seventeen, sought his stick, which was usually near his chair, and not finding it, seized a table knife which happened to be placed on a stool at his side. His wife and daughter placed themselves before the son, and endeavoured to force him out. But the old man threw the knife between them, and wounded the youth in the abdomen, which produced death in two days. Granting that the unhappy father was not intoxicated by two bottles of beer which he had drunk shortly before, Dr Hoffbauer conceives that the circumstances sufficiently explain how, transported by the insolence of his son, he might have lost the consciousness of his actual state to such a degree as to commit the murder. He probably forgot that he had a knife in his hand, or did not perceive that he had seized that instead of something else. This view is corroborated by the following circumstance. After throwing the knife, the old man sat down, smoked a pipe, and went quietly to bed. Verends calls this state *furor transitorius*, and endeavours to find its cause in the weak memory of the old man, his naturally passionate temper, his susceptibility rendered more acute by the habitual use of spirits, and bad health &c.

This tendency to fits of transitory fury, Dr Hoffbauer believes to be nothing else than mania. Mania is a diseased condition continuing for a length of time. Fury is a peculiar state, which is developed when provoked by various circumstances. Mania, *cæteris paribus*, is greater, the more trifling the cause required to produce a paroxysm of fury, and *vice versa*. When the degree of mania and the degree of the exciting cause of fury are mutually combined, these two causes, though apparently different, are the same in the eyes of the law.

Since the maniac is not culpable when he cannot be deterred from an action by the fear of punishment, the reflection with which an act has been committed is in itself no proof of his culpability. The object of reflection is either the performance of a deed, and the removal of those obstacles which stand in the way of its accomplishment, in which case the maniac will not be diverted from his purpose by the severest punishment; or it may be the finding means to avoid the penalty. In the latter case, it is probable that he has been to a certain extent restrained by the fear of punishment, if he did not flatter himself with the hope of escape.

If there be ground for believing that the penalty inflicted by the law is inadequate to deter an individual from the commission of a given act, it ought to be increased, at least in those countries where such increase is authorised. But the most terrible punishment is inadequate to restrain the maniac. He is no way a fit subject for punishment. The state, therefore, may and ought to take all necessary measures to prevent the unfortunate individual from injuring society.

Reflection called into play in the performance of an act contrary to law, for the purpose of escaping punishment, is a proof that the person foresaw and dreaded the penalty, which would have had the effect of deterring him, if he had not entertained the hope of escaping. His culpability is not, therefore, lessened, much less destroyed. But if the reflection directed to finding the means of avoiding the penalty be not exhibited till after the deed has been committed, we have no right to conclude that the individual might have been deterred from it by the fear of punishment, because it is possible that, before the commission of the act, all his moral powers were on the stretch for its accomplishment, after which, this tension of the faculties ceasing, the fear of punishment may have had an influence upon him which it had not before.

If the want of reflection drive any one to commit an action in the hope that it will remain unknown, and consequently unpunished, it cannot be alleged in his favour that the fear of punishment had no influence over him, nor ought the penalty to be remitted or lessened. If the accused exhibit reflection during and after the execution of his purpose, both to accomplish his design and evade the penalty, irresistible impulse cannot be pleaded, and he is amenable to justice.

When maniacs cannot be restrained by any penalties, they must be confined. Their seclusion is not to be regarded as a punishment, but only as establishing the fact, that the individuals secluded cannot be left to themselves. They ought to be confined in an hospital, not in a jail, because this last would have less influence in promoting their recovery, produce a much less moral effect, and act much less efficaciously for society. Whatever be the mode of disposing of the insane which may be thought suitable, no equality ought to be supposed to exist between them and malefactors.

When mania is complicated with mental illusion, and especially when it is founded on violent hatred towards an individual, it would be dangerous to leave the patient to himself. But in cases of this nature, he often conceals his resentment as well as the chimerical idea on which it is founded, and nothing is perceptible but a remarkable violence, which, however, warrants his being subjected to confinement.

When mania is connected with such a state of weakness of understanding or mental illusion, that the patient is no longer capable of managing his affairs, he should be deprived of all control over them. But according to the author, if neither of these complications exist, there is no reason for depriving him of the administration of his affairs, or of making a will, even when it has become necessary to deprive him of his personal liberty. This doctrine is quite untenable, and, indeed, the author seems to be somewhat dissatisfied with it, for he immediately adds, that it would be prudent to curtail his rights in these respects, because it is difficult to determine to what extent a person so circumstanced is master of himself.

To free a patient from the confinement or surveillance under which it has been judged necessary to place him, his cure must be authentically proved. If there be reasons to believe that this is perfect, it would be unjust and dangerous to defer setting him at liberty, and there is less reason for detaining him, as it is very easy to make him clearly understand that on the slightest occasion he may again be treated as a lunatic.

When a remarkable change without any apparent cause is observed in the state of a maniac, we must be on our guard, as this simulated amelioration is often a stratagem employed by the patient to accomplish a fixed and premeditated object. Strong moral impressions, however, the sudden feeling of his dependence, &c. may act powerfully on a maniac, and immediately restore him to reason. In illustration of this Esquirol in a note gives two remarkable cases, one of which only we shall notice. A young maniacal female, in a paroxysm of fury, rushed upon him during his visit, tore off his spectacles, and broke them to pieces. The other patients and the attendants immediately seized her. Esquirol ordered her to be released, and strictly commanded that she should not be reproached for what she had done. On his visit next morning he found her in tears. On asking her the cause, she replied with a blush that it was what had occurred the day before, and asked his forgiveness. He consoled her, and placed her among the convalescents. This produced the desired effect, and the mania did not return. The moderation of this experienced physician had made a strong impression on the patient, and to this the cure is attributable.

The other species of mental exaltation are as manifold as the passions which are of any duration, and as the sensual appetites, when reason no longer controls them. Though these in consequence may be fatal to the patient, they are attended with little danger to society. In a legal point of view, however, they demand attention, when they are of a nature to involve the fortune, as a mania for gambling, pictures, luxury, women, &c., or when they are attended with public indecency, as nymphomania, satyriasis, &c.

We pass now to the chapter on Somnambulism. The phenomena of this state are too well known to require description, and we shall therefore confine ourselves to the author's remarks on the question, how far this state can be taken into consideration in law.

Certain legal questions may arise from somnambulism, because it prevents a man from fulfilling the obligations imposed on him, renders him troublesome, or even dangerous to those with whom these *obligations* bring him in contact, and consequently ought to annul the contracts on which they depend. Such, at least, may be the case when the patient conceals his state, or when the disease manifests itself only after he enters upon the exercise of his rights. The law, in fact, must determine to what extent somnambulism can be taken into consideration in the case of a marriage agreed upon or already concluded, in that of servants and such like. But when the law is silent on the subject, it is to be presumed that the contract ought to be annulled, if the other party demand it, on the ground of the inconvenience, damage, or danger which may result. The question also is to be determined, how far a somnambulist is responsible for his acts during a fit of the disease.

Dr Hoffbauer is of opinion that a somnambulist should be considered during his fits as a man who does not enjoy the full use of his senses, and that he is the less responsible for his actions from his being unconscious of his state. As, however, he must be aware of his disease, he is assuredly culpable if he do not take every precaution to prevent himself from injuring others. His relations and guardians also would be to blame if they had not taken all prudential measures for the same purpose. Upon the whole, it is clear that somnambulism does not free a patient from the obligation to indemnify those whom he has injured during his fits, nor from the punishment which he may have incurred for an act then committed. This act, however, can amount only to a *culpa*, never to a *dolus*.

Passing over Dr Hoffbauer's general observations on the intellect of the deaf and dumb, we come to the consideration of the legal questions connected with their state.

The dulness of intellect in the deaf and dumb may be compared to weakness of understanding, and, in point of law, merits the same consideration, though the rules for distinguishing it be not the same. As, however, it is produced by the individual being unable to make use of ordinary language, and by defect of education, and as the one may be remedied or supplied, and the other repaired, the principles which have been established in reference to the imbecile and the stupid, can be applicable to the deaf and dumb only when they have not received a proper education. But when these individuals have been neglected in their infancy and youth, it is hardly to be expected that their intellect will be developed at any period of life. Even when the patient has received an education so elaborate that he can no longer be compared to the imbecile or the stupid, and even when he possesses remarkable intelligence and most extensive acquirements, we must still take into consideration the difficulty which he experiences in understanding others, or making himself understood by them. This must never be lost sight of when the individual is about to abandon any right, or to contract any engagement. If he can write well enough to express himself in a clear and positive manner regarding the subject in question, it is evident, that when he shall thus manifest his will, his transactions will be valid, unless the law has expressly provided for the case. The same holds good in respect to matters concluded verbally, when the deaf and dumb is in state to make himself understood, especially when the affair is so simple as not to give rise to any error or misunderstanding.

When the individual can make his meaning be understood by speech, it is a proof that he has received a better education than when he can express himself only by writing. This view, according to M. Itard, is erroneous. The possibility of the deaf and dumb being able to make use of spoken language is by no means a proof that he has received a better education than one who is reduced to the methodical language of signs. The logical induction is, that he has one means more of communicating his ideas, but it does not prove that he has a greater fund of ideas or of information. Under the direction of M. Itard, the education of two pupils, deaf and dumb children, was conducted, who were able to speak very distinctly with the assistance of a a little hearing which they had recovered, the ocular inspection of others speaking, and their own sagacity to devise what they could neither hear nor see, and yet they are both inferior to the deaf and dumb who have never learned to speak. If ever they equalled the most talented in the institution, this mode of communication ought not to be taken into account among the means by which they attained their superiority. The proof of the capacity of such individuals should be drawn neither from signs nor speaking, but from the manner of writing, and those ought to be considered the best instructed, who answer with the least hesitation, and the fewest mistakes, questions more or less complex, put to them on different subjects.

The opinion thus objected to being essentially erroneous, the conclusion drawn by Dr Hoffbauer must be the same, that the deaf and dumb who are able to comprehend spoken language must be able to manage their affairs. He conceives that in such cases the individual ought not, except in particular circumstances, to be deprived of the control of his property, but that when he can explain himself only in writing he ought to have a *curator bonis*. For his own security he ought to be placed under special surveillance, to protect him from the dangers against which the use of speech might defend him. Besides, the deaf and dumb are remarkably irritable, easily take offence, especially when among strangers, are hurried away by anger, entertain misapprehensions, and the means of conciliation which might be employed with others are ineffectual with them.

If a deaf and dumb individual can only read and write, it remains to be determined how far he is capable of making known his thoughts by writing. If he can express himself clearly on subjects within the limits of his knowledge, he must be allowed to express his motives in this way, provided there be not other reasons against it. More perspicuity, however, is required in writing than in speaking. There is much more trouble in reading what is written incorrectly, than there is in comprehending what is spoken ungrammatically. In the case of the deaf and dumb, blunders in spelling demand attention, though the deaf and dumb make fewer than those whose education has been neglected.

Their education is slow and tedious. Deprived of the facilities possessed by others, and having no means, so to speak, of corresponding with their fellows, it is long before they acquire abstract ideas. Such unfortunate individuals, even when they can express their ideas by the means already alluded to, are not on this ground to be supposed to possess a correct notion of matters of business, and till it be ascertained that they have the requisite degree of knowledge, they must be placed under tutelage like minors. As a necessary consequence a person deaf and dumb, when he has attained the age of majority, cannot be freed from tutelage before it has been ascertained that he has exact ideas of civil life. He ought to have a curator as long as he can neither read nor write. The curator or relations of the deaf and dumb must formally engage to educate them as far as their means permit. The expense, however, of such care renders the possibility of such measures being adopted doubtful, as long as there is no public establishment for the deaf and dumb. It is desirable, therefore, that Government should show itself as beneficent towards this class of unfortunate individuals, as it has begun to be towards the insane.

In criminal cases, the infirmity of the deaf and dumb modifies in a singular manner the responsibility, *first*, because the results of defective mental cultivation are the same as those of different degrees of weakness of intellect; *secondly*, because the deaf and dumb may be ignorant of the law; and *thirdly*, because they may be led to commit acts by causes which cannot be admitted in the case of other individuals. The weakness of the intellect of the deaf and dumb modifies their responsibility, not from its lessening the fault by rendering the want of attention excusable, for they most commonly observe the circumstances which strike their senses, but because the most trifling cause of excitement makes them lose all self-command and consciousness of their present state. In fact, it is difficult for them to turn their thoughts to several objects, or to perceive them with the rapidity necessary to recover themselves immediately, when transported by an unforeseen circumstance. Sometimes they may act from irreflexion, and then they are not chargeable even with *culpa*.

If ignorance of the law ought in certain cases to be taken into account in the deaf and dumb, it is always on the same principle as in the imbecile and stupid. But in the deaf and dumb it is always more easy to ascertain, how far they are culpable in the state of ignorance in which they are of the law, as the education which they have received and the relations in which they live are sufficient to solve the question. It has been already observed, that the deaf and dumb are much more easily provoked to anger and fury than others. This is occasioned by the violence of their gestures and motions, resulting from the great difficulty which they experience in making themselves understood, and from the concentration of their faculties on one object, and their inability to embrace several at once. It is a psychological fact also generally admitted, that violent movements of the body coincide with those moral affections which are characterized by violence, as if the latter must be relieved by the former. Children and savages, whose minds have not been cultivated, testify their joy by cries, leaping, &c. and we would be apt to do the same if we were not restrained by notions of expedience, decorum, &c. We still walk about, agitate ourselves, rub our hands, and, what is very remarkable, increase by these very motions the feelings which occasion them

The remarks of Dr Hoffbauer and his annotator M. Itard, on the means of ascertaining in the deaf and dumb those peculiarities which ought to be taken into consideration in a legal point, are worthy of every attention.

If the deaf and dumb individual be capable of making himself understood, and of understanding others by means of oral language, the degree of his intellect and the extent of his knowledge may be easily ascertained. The person interrogating him with this view ought to articulate slowly and distinctly, and never appear the least surprised at the extreme difficulty with which the individual questioned expresses himself, as he is easily intimidated, and may therefore show himself to be different from what he really is. If the oral examination do not lead to conclusive results, an examination in writing may be conjoined with it, the deaf and dumb who are able to speak being generally able to write. In reference to this view, M. Itard remarks, that when the deaf and dumb can communicate his ideas by speech, he must have acquired this faculty by means of writing, either aided or not by the method of signs, and consequently not only will he be able to write every thing which he is able to speak, but he will comprehend much better in this way the words which may be addressed him, than by the inspection of the lips of the speaker. His intellectual capacity, then, ought to be ascertained by writing. If he cannot communicate his ideas in this way, he ought to be considered as destitute of that education which would render him responsible for his acts, and in this respect assimilated to an idiot. To prevent the accused from concealing his education in the hope of escaping the consequences of his actions, he may be charged with a crime of greater magnitude than he has committed, and altogether of a different nature. In this case, if he can write he will have recourse to this means of justifying himself, and by his answers the calibre of his intellect and the extent of his education may be discovered. Other means may also be had recourse to, as the perusal of letters which he may have written a short time before, and inquiries into the amount of education which he has received, the assiduity with which he pursued his studies, &c. When it is ascertained that he comprehends the questions put to him in writing, he is pretty nearly in the same situation as an ordinary individual before a judge, and from whom it is the more easy to obtain disclosures, the more ignorant he is of the dexterous and indirect ways by which justice obtains them from the guilty.

In a conversation with the deaf and dumb conducted in writing, the questions ought to be simple and easy of comprehension to all. The questions also ought to be chosen which it is supposed that he will answer, but not such as he could foresee, as he may perhaps answer them without considering well their meaning. If he answers correctly or nearly so to questions put with these precautions, there is no doubt that he comprehended them, and that he is capable of conversing by means of writing. The opposite is not so easily concluded from faulty answers, as it is possible that through vanity he may have answered too rapidly, to avoid being thought slow of comprehension. Such an individual will rather answer at random than betray his infirmity by causing the question to be repeated to him. But if most of the answers be wrong, if he repeat a certain number of them, without passing beyond them, it is evident that he can paint but not write.

The next portion of the volume is devoted to the consideration of those evanescent states of mind which may come under the consideration of the medical jurist. These are, intoxication, the intermediate state between sleeping and waking, a momentary state of disturbance, and that in which the individual is forced against his will to commit certain acts.

Though intoxication be not solely the result of the use of spirituous liquors, it is more easy to distinguish its different degrees by observing their action on man, and following the drinker, so to speak, from the first symptom of intoxication till he falls down dead drunk. The first effect of alcoholic liquors is to exalt the general feeling of comfort, or really to augment the comfort itself, and at this period they appear to act as beneficially on the intellectual faculties as on the physical powers. The thoughts seem to flow with greater facility, the individual expresses himself more easily and correctly, he is more sociable, and he finds himself in such a frame of mind, as, if it were possible, he would always wish to be, both in respect to himself and others. Up to this time there is no appearance of intoxication. The torrent of ideas, however, soon becomes more rapid and more violent, they can hardly be repressed, and this is the moment of happy sallies of wit. But a great effort is required to give an account of any circumstance at all involved, on account of the thoughts following each other with too great rapidity to be arranged in that order which a narrative requires. This is the first marked symptom of intoxication. At a later period the ideas succeed each other with a violence always on the increase, the senses lose their usual delicacy, and the imagination gains in proportion as they lose. The language of the drinker is at least in some expressions and turns of phrases more oratorical and more poetical, and he speaks more loudly than usual. The first of these two peculiarities depends on exaltation of the imagination, the second on a blunting of the senses becoming more and more remarkable. The drinker raises his voice, because he hears less distinctly, and he judges of the hearing of others by his own. The activity and rapidity of thought, however, have some share in this. The senses soon become still more obtuse, and the individual occasionally for a moment confounds those by whom he is surrounded, and whom he perfectly knows. He lets a glass fall, which he thought he had placed on the table, although the awkwardness and uncertainty of movements which afterwards occur, are not yet observed. To judge by his discourse, his ideas begin to lose their integrity, in spite of their vivacity which, with their rapidity, gives a degree of force to the passions which reason cannot resist. He stutters or lisps, his legs fail him, he staggers and falls into a deep sleep, or all his moral and physical powers are extinguished at once.

The deep sleep alluded to is rather an effect than a degree of intoxication. This state, in which a man can do neither good nor evil, belongs to legal psychology only in so far as it may occasion neglect or loss of time, for which the individual is responsible, because responsible for his intoxication. The state immediately preceding intoxication cannot be taken into consideration by the tribunals, because it does not at all alter the integrity either of the moral or of the physical powers. Dr Hoffbauer, therefore, distinguishes only the three degrees, and three periods of intoxication now to be described.

In the first degree, the ideas are marked only by unusual vivacity, and consequently the power of the intellect over the actions of the man is so little weakened, that he is perfectly conscious of his external state, his senses are unimpaired, and in a word he is perfect master of himself. The rapid flow of thoughts, however, prevents reflexion, and the degree of intoxication now alluded to, produces great irritability and a morbid tendency to mental emotions of which the rapid course of ideas is the distinguishing character. This is explained by the impulse which intoxication communicates to the imagination, and by the well-known psychological law that one state of mind more easily produces another, when both are in unison. Anger is much more rare in the first degree of intoxication from the self-satisfaction enjoyed by the individual, rendering him more patient up to a certain point. But some antecedent circumstances, which may have increased the irritability, dispose a man to fury. As long, however, as intoxication does not pass the first degree a man may repress his inclinations and the expression of his feelings, because he is still so far master of himself as to be able to recover himself when the cause which has excited them ceases.

In the second period of intoxication, man still has the use of his senses, though they are weakened to a remarkable degree. His memory and intellect, however, leave him, and he acts as if he is to live only for the moment, for the idea of the consequences of his actions does not influence him, as he no longer perceives the connection between the one and the other. His past life escapes his recollection, and he cannot be influenced by relations which he no longer remembers. A trifle may rouse his passions or divert him from them. In this state he is the more dangerous to himself and others, from his being under the influence of an irresistible impulse, and from his rarely knowing precisely what he is doing. He is then undoubtedly in a state similar to that of a maniac, and he can only be held responsible for his actions in so far as he is responsible for his intoxication.

In the third degree of intoxication, not only is the man not master of himself, but his senses are weakened to such a degree, that he is not even conscious of his external state. He is more dangerous to himself than to others.

These different degrees may pass into one another more or less rapidly, according as the different causes already mentioned co-operate. But as intoxication destroys all responsibility for acts committed during its continuance, unless the individual be responsible for the danger to which he has exposed himself, the latter becomes a question of great importance.

A man is not responsible for his intoxication in three cases; *first*, when it is occasioned by the use of substances, the intoxicating quality of which was unknown to him;—*second*, when it is produced by the action of extraneous causes, the effect of which could not have been foreseen;—*third*, when it results from the moderate use of alcoholic liquors, the effect of which has been increased by circumstances. In the last case, the responsibility for his acts does not cease, unless he had no control over the circumstances.

The remaining chapters, on the intermediate state between sleeping and waking, on momentary derangement, unusual impulse to a determined act, the validity of witnesses mentally affected in the various ways already alluded to, and the general rules for recognizing any mental disease, and M. Esquirol's lengthened note on homicidal insanity, we are compelled by our limits to leave unnoticed. We do this, however, with the less reluctance, that we have been able to lay before the reader a summary of the principal doctrines advanced by the author, and that the legal principles applicable to the mental states which we have noticed, may, with slight modifications depending on circumstances, be applied to those conditions, into the consideration of which we do not intend to enter.

Dr Hoffbauer's work deserves a place in the library not only of every medical jurist, but of all those who may be called upon to take charge of the health and property of the insane.

Art. V.—*Physiologie des Menschen.* Von Friedrich Tiedemann, Lehrer der Anatomie und Physiologie an der Universität zu Heidelberg. Dritter Band, Nahrungs-Bedurfniss, Nahrungs-Trieb und Nahrungs-Mittel des Menschen. Darmstadt, 1836.—*Physiology of Man.* By Frederic Tiedemann, Professor of Anatomy and Physiology in the University of Heidelberg. Third volume, *treating of Need of Nutrition, Nutrition-impulse, and Materials of Nutrition.* Darmstadt, 1836. 8vo. Pp. 403.

The first volume of this work appeared at Darmstadt in the year 1830; and of that volume a short account was given in the 45th volume of this Journal [p. 236]; and we were in hopes that we should soon have an opportunity of noticing the appearance of the subsequent labours of the author. His progress, he informs us, has been interrupted by domestic affliction and bereavement. And when his mind was again capable of returning to scientific research, particular circumstances obliged him to publish the third volume, which begins to treat of special physiology, before the portion devoted to general physiology had been completed.

The practice of piratically publishing works of any value or interest prevails in the kingdom of Wurtemberg to a most audacious and shameless extent, and is, it appears, not checked by any legal restrictions or penalties. This circumstance, and the facility of procuring surreptitiously through the transcribers of the college courses, the lectures of the teachers, induces unprincipled persons sometimes to proceed a step further, and to announce for publication, lectures or discourses which were never before published, and which, consequently, must appear without the final revision and correction of the author. A proposition of this kind was attempted with regard to the lectures of Professor Tiedemann in the course of the year 1835; and he received with some astonishment a notice of the intended publication of a treatise on the Physiology of Digestion, according to the lectures of Dr F. Tiedemann, by a bookseller named Nubling, at Ulm. Upon inquiring into the cause of this proceeding, he received for answer the information that a very distinctly written manuscript, without title, had been transmitted by the antiquary Christian Hausmann of Stuttgart, and directed to be printed at his expense. As the Professor conceived none of his pupils capable of such a piece of baseness, he inferred that it was likely that the said Christian Hausmann, to whom he applies an epithet not very complimentary, must have purchased the manuscript from some transcriber in Heidelberg.

He was in the meantime so incensed at the conduct of the learned antiquary, that, as there were no means of protecting copyright, he at first thought of having lithographed a figure of Christian Hausmann of Stuttgart hanging on a gibbet. But from this unbecoming and undignified species of revenge, he was fortunately saved by the consideration, that the individual was really not worth the expense of paper and printing.

The manuscript, from which the lectures were proposed to be published, was so full of errors and inaccuracies, that he warns all against purchasing it; and as Mr Christian Hausmann, Professor Tiedemann had learned from different quarters, had in view the publication of the other parts of the special physiology, he had come to the resolution to publish the genuine edition of the same with the greatest expedition.

This is the history of the reason why the third volume of the present work appears before the second. It will be remembered, from the account given of the first volume, that the entire work of Professor Tiedemann was to consist of two great divisions; one devoted to the subject of the general doctrines of Physiology; the other to those of particular Physiology, or the examination and physiological history of the individual functions of the human body. The first part, or that on general physiology, occupies the first two volumes, one of which only has yet appeared. The second volume of this part, he informs us, in the preface to the present volume, is now so completely prepared and arranged, that it will speedily be at press.

Of the second part, or that relating to particular physiology, the author informs his readers, that the individual doctrines are so arranged in separate portions with particular titles, that each may be regarded as a complete treatise within itself. Of these parts the present volume is the first; and in it the author enters on the consideration of the special physiology, by treating of nutrition in general, and the process of digestion in particular. His method may be understood from the following sketch.

Professor Tiedemann commences the department of special pathology, by a preliminary discourse on the functions of nutrition in general; because this may be regarded as the first in order of the different processes presented by the living animal, when they are contemplated in successive relation. As soon as the child is separated from the maternal organism, it encounters many foreign operations and physical agents of the external world, viz. air, odorous effluvia, heat, light, sound, and different mechanical impressions. By means of the skin, sensation, the respiratory passages, and partly through their influence on the blood, they rouse the cerebral system of the infant to a degree of energy, which is indicated by the commencement of the different sensations.

At the same time commences a vigorous separation of manifold materials in the form of exhalations and guttiform fluids; pulmonary, cutaneous, urinary, and intestinal, including the hepatic.

This abundant secretion of materials of various sorts taking place after birth, is, he remarks, the result of a more rapid interchange of matters in the frame of the infantile organism in its fluid and solid parts, which is the consequence of the new and more intense form of vital action. This is produced, on the one hand, by the operation of physical agents on the secreting organs, and the blood circulating in their vessels; and on the other, it is occasioned by the irritations produced by stimuli on the nervous system and muscles, and with which are associated simultaneous changes in the organic materials, and through which they are rendered incapable of remaining in the organic tissue of the nerves and muscles. The decomposed and useless materials are absorbed by the absorbents, and carried into the blood, and from this they are eliminated by the secreting organs.

This incessant waste, which proceeds to a considerable amount in the course of twenty-four hours, viz. the twentieth part of the whole mass in the adult,—requires for its repair, Professor Tiedemann remarks, a constant supply of new materials; and hence the necessity of food, drink, and air, with the concurrent influence of such physical agents as heat and light. The reception of nutritious materials, and the process and act of life, by which their conversion into the formative and nutritious fluid of the frame, viz. the arterial blood, is effected, and the association and assimilation of its constituent parts with the textures entering into the substance of the organs,—by which they acquire their vital properties or powers, constitute the business of nutrition, or the renovation of the frame. The repetition and continuance of the mixing organization, and vital properties of the human organism to the accomplishment of its manifold living operations, proceed continuously and without interruption.

Professor Tiedemann then takes a general view of the process of nutrition, its component parts, and their relation to each other, its stimuli, as hunger, thirst, and the feeling of the necessity of respiration. He distinguishes the process of assimilation into four stages; the first digestion or chylification in the first passages; the second, the absorption of chyle and its conveyance into the blood; the third, its being mingled with the blood of the pulmonary artery, and subjected by means of the lungs to the influence of atmospheric air, then undergoing circulation, and contributing to secretion; and lastly, nutrition, properly so named, or the application of the nutritious particles to the formation, growth, and maintenance of the different organs; and as each of these processes is carried on within the economy, for the purpose of preparing the foreign matter to be subjected to the action of that which succeeds it, he adopts this order as the best and most natural arrangement for tracing the physiological history of the human body. If we wish to arrive at the knowledge of the manifold and very complex operations of the function of nutrition, this method, he conceives, is the simplest and the most natural. The manner in which this plan is executed may be understood from the following sketch, which comprises a view of the whole treatise published and unpublished.

First, he treats of the feeling which indicates the necessity of receiving food and drink into the nutritious cavity, and accordingly of hunger and thirst. He next considers alimentary articles, condiments, and drinks, their chemical composition and properties, in order to ascertain what materials and elements they possess, which may fit them to enter into the composition of the fluid and solid parts of the animal frame. It is at the same time requisite to determine their operations on the animal economy. He next directs attention to the reception of alimentary articles, and traces the changes which they undergo in the divisions of the alimentary cavity, by the motions communicated to them, and by the influence of the gastric juice, and how they are thereby changed or assimilated to the human body. The further prosecution of this inquiry leads to the absorbents, their vital properties, the absorption of chyle and lymph, and the motions communicated to them, and also to the question of the changes which these fluids undergo in the absorbent system.

The next subject is respiration, the structure and the vital properties of the respiratory apparatus, the respiratory motions, the constitution of the air, and the blood circulating through the lungs, and the changes which take place in the inspired air and in the blood.

He then treats of the blood, its quantity, its external appearance, its organic constituents, its mixture and its changes after the reception of food, drink, medicinal and poisonous articles, and also after the vital conditions of the whole frame, and of the individual organs.

Then comes the circulation, the examination of the structure of the heart, of the arteries and veins, and their respective powers, and how, by means of their united operation, the circular motion of the blood is accomplished. This is succeeded by the doctrine of nutrition, the statement of the phenomena and processes which take place in the interior of organs by its operation, from what parts of the arterial blood they are formed, and from what parts their organic tissue is restored and renewed. Under the same head come the examination of the healing of wounds, and the reparation of lost parts.

In a separate book, he enters on the subject of the secretion of the fluids, the structure of the secreting organs, their vital properties, the processes connected with their functions, and their importance in the animal economy.

Lastly, With the business of nutrition, and the secretion of fluids, is allied the consideration of the influence of the imponderable agents of heat, electricity, and, under certain conditions, even of light and fire. This forms the subject of the last book, devoted to the functions of nutrition.

Of this plan of arrangement only a small part is completed in the present volume, which contains the fifth book—devoted to the consideration of the nutritious impulse and the history of alimentary articles, and in two separate sections.

By the nutritious impulse, the author means that feeling or instinctive consciousness of the necessity of receiving new materials, in consequence of the incessant waste by means of secretion, and the separation or excretion of different sorts of materials from the economy. This feeling manifests its existence by the peculiar sensations of hunger and thirst; and of these accordingly the author treats in the two chapters of the first section. Professor Tiedemann distinguishing the sensation of the desire of food into two sorts, appetite and hunger, gives an account, first of the phenomena of each in the healthy state, and then of their morbid conditions, and of the changes which they undergo when the system is under the operation of disease. Here he treats of the effects of abstinence, and the phenomena of death by starvation, of morbid appetites, as dirt-eating, anorexia, *bulimia*, and excessive voracity.

The second section on the alimentary articles, which occupies the larger proportion of the volume, is divided into eight chapters.

In the first, the author takes a general view of alimentary articles used by mankind in the different periods of the world, and among different nations and tribes, their comparative fitness to be employed as aliments, and very briefly the subject of animal or vegetable aliments alone, or a combination of both; and very properly refers to the facts of comparative anatomy to decide this point. At the close of the chapter he distinguishes all articles used as aliment into three orders, viz. articles of food, (*cibi*), fluids used as drink (*potulenta*), and lastly, articles used as seasoning or condiments (*condimenta*).

In the second chapter, he treats of the organic connections, or simple nutritious elements of which the different alimentary articles are composed; and divides them into two great classes; 1. alimentary articles containing azote, as albumen, animal jelly, osmazome, gluten, gliadin, and even vegetable jelly; and 2. alimentary articles void of azote, as the different varieties of fecula, gum, sugar, oily matters, volatile and fixed; and concludes with some observations on the relative nutritious properties of each, as demonstrated by experiment.

In the third chapter, in which he treats of the compound animal aliments, he considers first the parts and secretions of the Mammiferous animals which have been or may be used as food, as muscular flesh, several of the internal organs, as brain, liver, spleen, kidneys, &c. milk, butter, and cheese; secondly, the parts and kinds of birds used as food, for instance, eggs, and the different kinds of game; thirdly, the amphibious animals used as food, as the frog, the tortoise, the turtle, viper and iguana; fourthly, the fishes used as food, with the subject of poisonous fishes; fifthly, the crustacea; sixthly, the insects; seventhly, mollusca; eighthly, worms; and ninthly the radiated animals.

In the fourth chapter are considered the compound vegetable alimentary articles. These he arranges under two general heads; I. alimentary articles from the vascular plants, including 1. seeds; 2. fleshy fruits; 3. roots and radical tuberosities; 4. young shoots and sprouts; 5. leaves or blades, stalks and flowers; 6. the fruit receptacles and calyces, as in the *Cynarocephalae*; and 7. the pith, as in the case of the *Cycas circi-*

nalis, which furnishes the sago. And II. alimentary articles from the division of cellular or *Acotyledonous* plants; including the Ferns, Lichens, *Algæ*, and mushrooms.

The seeds he distinguishes into the farinaceous and the oleaginous. The former includes the seeds of *a*, the *Cerealia*, or humble but useful grassy vegetables, as wheat, barley, oats, rice, panic, millet-seed, and maize or Guinea corn; *b*, the seeds of the family of *Polygoneas* and *Chenopodeae*, as buckwheat; *c*, the seeds of the papilionaceous or leguminous plants, as peas, beans, vetches; and *d*, seeds from the amentaceous family, as the chestnut, acorn, the *Nelumbo* (*Nelumbium speciosum*), used by the Egyptians, of the *Nymphaea lotus*, and the fruit of the water-nut (*Trapa natans*,) which is used as food in Venice.

The oleaginous seeds, though little less numerous, are not so extensively employed as alimentary articles. They are the various nuts, as the almond, walnut, filbert, pistachio, cashew-nut, the myrobalan, and the cocoa-nut.

The fleshy fruits he distinguishes into the 1. stone-fruits, as the peach, nectarine, plumb; 2. apple-fruits, as the apple, pear, and quince; 3. berries, as the grape, gooseberry, bilberry, cranberry, the multilocular fruits of the orange-tree genus, the pomegranate, those of the sapota-tree, (*Mammee sapota*); and those of the egg-plant and tomata or love-apple, (*Solanum esculentum* and *S. Lycopersicum*); 4. capsular fruits, as the banana; 5. flower-cup fruits, as those of the fig-tree and bread-fruit tree; 6. the pumpkin or gourd-fruits, as those of the citrul, cucumber, and water-melon; and 7. the siliquose fruits, as the *Ceratonia siliqua*, and the tamarind-tree.

The roots and radical tuberosities employed as aliment he distinguished according to their predominant constituent parts, into the following five subdivisions. 1. Feculiferous or starchy radical tuberosities, as the potato and the wild potato, the Cassava, the roots of several species of Convolvulus, (*Convolvulus batatas*, *C. edulis*, *C. platanifolius*, &c.) known as batatas, the yam, (*Dioscorea bulbifera*, *sativa*, *et alata*,) the arrow-root, (*Maranta arundinacea*), some of the *Aroideae*, *Nymphaeaceae*, and the *Iridcae*. 2. Feculo-adipose radical tuberosities, as the edible earth-nut, or tubercles of the *Cyperus esculentus*, the nuts of the *Arachis hypogaea*, and those of the *Helianthus tuberosus*, *Girasole* in Italian, known under the vulgar name of Jerusalem Artichokes. 3. Feculo-mucilaginous tuberosities, as those of the orchis tribe, which furnish salep. 4. Mucilagino-saccharine roots, as the carrot, parsnip, celery, parsley, and beet root. And 5. Roots containing a pungent volatile oil, as the turnip, the radish, the turnip-radish, the horse-radish, the leek, onion, shalot, and garlick.

Under the head of young shoots or sprouts, he arranges asparagus, the shoots of the hop, those of the *Phytolacca decandra*, which are used in the United States like asparagus, the young buds and leaves of some of the palms, as the cocoa-nut tree, the cabbage palm *(Areca oleracea,)* and those of the banana.

The leaves and stems employed as aliment must be familiar to all. It is sufficient to say, that among them are arranged the different varieties of the colewort, brassica, spinach, lettuce, rhubarb, mallows, and purslain.

Among the acotyledonous or cellular vegetables, he mentions among the ferns the *Pteris esculenta*, as used in the Society Islands, and in New Holland, the *Cyathea medullaris* in New Zealand; among the lichens *Cetraria islandica;* and concludes with a complete list of the edible and poisonous mushrooms.

In treating of these substances, Professor Tiedemann gives an account of their chemical composition according to the best authorities, and mentions briefly their physiological effects and dietetic uses.

The fifth chapter, though short, is interesting. It is devoted to the subject of the nutritive and other properties and operations of aliments of different kinds.

In the sixth chapter, the author describes the different articles used either as condiments or additions to aliments. These he considers under six heads. 1*st*, salt; 2*d*, acids and acid vegetable condiments, as capers, pickles, &c.; 3*d*, saccharine condiments, as sugar and honey; 4*th*, fat and oleaginous accompaniments, as butter, lard, tallow, and the different expressed vegetable oils; 5*th*, condiments with pungent volatile oil, as mustard; and 6*th*, condiments with volatile aromatic oil, including the different peppers, cloves, nutmegs and mace, vanilla, cinnamon, ginger, betel, &c.

In the seventh chapter, devoted to the subject of drinks, the author treats first of water, spring water, rain water, river water, well water, and mineral waters, hot or cold; then of the milky or emulsive drinks obtained from animals, viz. the milk of the cow, goat, ewe, ass, and mare; and successively of vegetable milk, or that from the milk or cow tree, (Palo de Vacca, Arbol de Lache,) the euphorbia, and the cocoa-nut; of blood; gelatinous and osmazomatous drinks, mucilaginous drinks, acid drinks; aromatic-astringent drinks, as coffee, tea, and chocolate; and lastly, the fermented and spirituous or distilled drinks. In this chapter we find a learned and instructive disquisition on coffee, its history and extensively employed use, and its physiological properties and effects as a dietetic article. To the subject of tea, chocolate, and cacao, a similar though not equally lengthened discussion is devoted. And last of all comes a very able and accurate account of the different kinds of French, German, and Italian wines, especially the two former, with many curious and instructive remarks on the physiological effects of each sort; an equally able account of the varieties of beer, ale, and porter; and a short notice of the mere spirituous drinks, under which head the author arranges punch, grog, bishop and cardinal, mulled and spiced wine, and such pernicious compounds as cherry brandy and raspberry wine. This is followed by an ample and instructive train of remarks on the good and bad effects of the use and abuse of these liquors, and a correct history of *delirium tremens.* The chapter is concluded by a sketch of the narcotic articles used in various parts of the world, as substitutes for spirituous or vinous drinks.

The eighth and last chapter of the book consists of observations on the selection of food, condiments, and drink, and their use in observing a mode of life for the preservation of health. This is a very instructive chapter, and contains an excellent selection of well-digested facts, illustrating the general principles which the author promulgates. Professor Tiedemann adduces several important facts to prove the beneficial influence of great moderation in the use of food, and the use of vegetable rather than animal food, or a very small proportion of the latter, in the preservation of a firm and unbroken state of health. Thus, in addition to the example of Cornaro, he mentions that of Dr William Stark, little known among continental writers, that of Lieutenant Bligh, and his boat's crew, and that of Captain Franklin, to show with what scanty means life may be maintained, and health may be preserved. He quotes the example of St Hilarion, who consumed daily only fifteen figs, or six ounces of barley bread or fresh roots, and retained his health with corporeal and mental vigour to a very advanced age. In illustration of the necessity of abstinence from animal food, or taking but a small proportion of it, for those engaged in much continued mental exertion, he quotes from Cheyne, the instance of Newton, who, while he composed his Treatise on Optics, lived only on bread with wine and water. Perhaps one of the most pertinent examples, both in illustration of the health and strength that may be preserved, and the mental vigour and energy, as well as endurance that may be maintained by diet of mere bread and water, is the example of Benjamin Franklin, who, when working as a journeyman-printer in London, lived in this manner, consuming about ten pound of bread in the week, or one pound and a-half daily, yet enjoyed a greater degree of average vigour, strength, and endurance of labour, than any of his fellow workmen.

In his further remarks he distinguishes the different kinds and quantities of food, according to the strength and habits of the nation, tribe, or individual, according to age, sex, mode of life, climate, and season of the year. He then considers the question as to the selection of fluids for drink; and, though he allows strong beer well-malted to day-labourers, agricultural peasants, and others who make great corporeal exertions, he maintains that water is the natural fluid to preserve health, and quite sufficient to maintain strength. It is nevertheless odd to hear him repeat the vulgar opinion, that strong and spirituous liquors are necessary to the inhabitants of the north, and remark, that in cold countries, and in the voyages in the polar seas, the Europeans would be unable to exist on the use of water alone. It is undoubtedly a fact, that the inhabitants of the northern regions manifest a great fondness for strong spirituous liquors, and consume as much as they can procure. But this does not prove that these stimuli are beneficial in protecting them against the cold, or enabling them to endure its effects; and many facts might be adduced to prove that cold is much less easily borne, and is much more injurious, with than without the use of spirituous liquors.

He then proceeds to discuss the question of the number of meals, and the time at which it is best to take them. For strong, robust adults he allows only three meals daily; breakfast, dinner, and supper; each taken after an interval of six hours, the dinner being as soon after noon as possible, constituting, in short, a noontide meal. The practice of taking one large meal in the day he decidedly condemns as highly injurious to the organs of digestion, which were never intended to undergo the extreme distension and stimulation, contraction and collapse necessarily thus caused. For young persons, who digest rapidly and have frequent calls of appetite, for persons engaged in labour requiring great efforts, and for pregnant women and wet nurses, in whom the alimentary impulse is augmented, and the appetite is increased, he allows an intermediate meal between dinner and supper, corresponding to the four-hours of the old English and Scottish (Vieruhrbrod.)

The period for taking the principal meal must be regulated by the rank, the occupation, the climate, and the customs of the parties. A combination of articles is recommended as more digestible, more nutritive, and more salubrious than constantly adhering to one species of food. But moderation must be observed; and supper, when taken, should always precede for several hours the time of retiring to rest, otherwise the sleep will be disturbed and unrefreshing.

Lastly, moderation in the use of food and drink is most conducive to health and longevity, and furnishes to all persons the means of attaining a fresh and vigorous old age, and to the feeble and delicate the only means of rendering life endurable. To encourage his readers in persevering in the observance of these austere rules, he records several remarkable examples of individuals who, on a diet of vegetables, or bread and water, not very copious, attained the ages of 85 years, 90, 91, and 115. Thus Paphnucius, on bread and water, attained the age of 90. Francis Von Paula, who often for several days eat nothing whatever, and usually made a spare meal at sunset, and drank pure water, lived 91 years. St Antony, who lived on vegetables solely, and St Paul, the hermit, who subsisted almost solely on dates, each attained the age of 115 years. Cardinal Salis, who observed the strictest moderation, attained, with the most serene state of mind, the age of 110 years, and died in 1785.

It is impossible, however, to enter into the learned and interesting details given in this work, which must be perused with care and attention, in order that its merits be justly appreciated. From the account now given, however, our readers will easily perceive that the present volume constitutes a most complete and instructive treatise on the *Materia Alimentaria*, and the physiological principles of dietetics. An important and valuable character of the work is, that Professor Tiedemann, by prefixing to the commencement of each section, chapter, and subdivision, a list of the principal works and essays on the subject discussed, has rendered his work not only a treatise on the subject of aliment and dietetics, but a methodical literary history of it, to which the intelligent reader may with confidence resort for information on every point. Another useful circumstance is, that, besides the general information conveyed in the text, the author has added in numerous notes much important and curious information that could not conveniently have made part of the text.

The manner in which this work is composed forms a remarkable contrast between the different modes in which a French and a German author write a treatise on physiology. A French author would have commenced by supposing, and perhaps by saying, that physiology was in a most uncultivated state, that it was not a science of facts, but merely a confused and discordant mass of conjectures and opinions, and would forthwith have proceeded to remodel the science himself, and performed with this view experiments which had certainly been performed before, but of which he was ignorant, and with which he did not take the pains to make himself acquainted. Very different is the course of the present author. Intimately and accurately informed of the labours of his predecessors and contemporaries, he arranges in their proper place the whole of the facts collected and established by each, shows wherein they differ and wherein they agree, points out defects and desiderata, rectifies errors, shows what general conclusions may be safely established, and converts the whole into a uniform harmonious system. We have no hesitation in saying, that, when the present work is completed, it will furnish the physiologist not only with positive knowledge, but, what is not less important, with the evidence on which that knowledge rests, and a clear historical view of the steps by which the science has attained its present state.

ART. VI.—*Handbuch der Physiologie des Menschen fur Vorlesungen*. Von Dr JOHANNES MÜLLER, ordentl. Offentl. Professor der Anatomie und Physiologie an der Konig-Friedrich Wilhelms-Universität. und an der Konigl. Medizin-Chirurg. Militär-Academie in Berlin, u. s. w. Erster Band, Zweite verbesserte Auflage. Coblenz, 1835. 8vo. s. s. 856. —*Manual of Human Physiology*. By Dr JOHN MÜLLER, Ordinary Official Professor of Anatomy and Physiology in the Royal Frederic-William University, and the Royal Medico-Chirurgical Military Academy at Berlin. Volume 1. Second edition, improved. Coblenz, 1835. Pp. 856.

OF this work, which appeared first in 1833, the present edition is at once augmented and improved so much, that so far as it goes, and as it is possible to judge from one-half of the work, it affords promise of being one of the most perfect and useful treatises on physiology extant. It is on this account, that although our limits and its extent will not permit us to give a full review of it, we propose to give a short sketch of its nature and contents, and direct the attention of our readers to its peculiar merits.

The author begins his work with an able and philosophical introduction on the nature and character of organic bodies; on organism and life, and the characters by which they are distinguished; on animal organism and animal life, with the distinctive characters between plants and animals, the peculiarities of animal organization, the laws regulating animal irritability, the operations of different medicinal agents, and the characteristic differences of diseases; and lastly, on electricity, as developed by, and influencing animal bodies, on the developement of heat by, and its influence on, animal bodies, and the developement of light by animal bodies. Under the first head of the last division he presents a correct view of the phenomena exhibited by the electrical eel, the *torpedo*, and the *gymnotus*, of electrical phenomena exhibited by frogs and the human race, and concludes with a hypothesis of animal electricity. Under the second we find a good account of the phenomena of the winter sleep of hybernating animals, a view of the causes of the production of animal heat, and an attempt to explain the cause of hybernation, which he regards as similar to the winter sleep of plants, and a state similar to asphyxia, in consequence of the want of the stimulus of external heat.

These general doctrines being premised, Dr Muller proceeds to the subject of Special or Particular Physiology, the departments of which he arranges in the following order:—

I. Of the generally distributed animal fluids, of the circulation of the fluids and the vascular system.

II. Of the organic-chemical changes in the organic fluids, and the organized parts.

III. Of the natural philosophy of the nerves.

IV. Of the muscular actions, of voice and speech.

V. Of the senses.

VI. Of the manifestations of the mind.

VII. Of generation or reproduction. And,

VIII. Of developement.

Each of these subjects is considered in detail in a separate book, which is subdivided into sections corresponding to the natural divisions of each subject. The present volume, consisting of three books, embraces the consideration of the three first subjects only; viz. the general fluids and their circulation; the organic chemical changes in the fluids and their organized parts; and the natural philosophy of the nervous system. A short view of the manner in which each is treated will communicate a general idea of the nature of the work.

There are in the animal body only two generally distributed fluids, viz. the blood and the lymph; and as the physical and physiological history of these substances, and the means by which they are conveyed to the different parts of the system, forms the subject of the first book, it also furnishes the principle of division. It consists of three sections,—the first devoted to the blood, the second to the circulation of the blood and the history of the blood-vessels, and the third to the lymph and the system of the lymphatic vessels.

After premising some general observations on the colour, density, and other physical properties of the blood, Dr Muller gives a minute microscopical analysis of its constituent parts, the globules, serum and fibrine, and the variations induced in each, in different sexes, ages, and temperaments, from Lecanu.

He then enters in the second chapter, on the chemical analysis of this fluid and its component parts, and concludes with a good account of the fatty matter found in blood. In the third chapter he treats of the analysis of the blood by the galvanic pile, chiefly from the researches of Dutrochet and himself, and gives of this mode of investigation a very interesting account. The fourth chapter is devoted to the organic properties and relations of the blood, with an ingenious inquiry on the formation of the fluid, and its repair and maintenance.

The second section, on the circulation of the blood and the blood-vessels, is more lengthened. The author begins with a view of the different forms presented by the vascular system in the animal world, from the radiated animals, upwards to the Mollusca, and then to the different classes of vertebrated animals. He then, in the second chapter, gives a history of the general phenomena of the circulation, and successively the small or pulmonary circulation, the large or general circulation, and the circulation of the portal vein. In the third chapter he treats of the heart as an impelling agent, its energy, and the influence of respiration, and of the nervous system, and especially the sympathetic nerve upon it. In chapter fourth, devoted to the individual parts of the vascular system, Dr Muller considers first the influence and power of the arteries, their contractility, and the influence of such accessary causes as gravitation; the influence and power of the capillary vessels, and the phenomena of the motion of the blood in them; turgescence, erection and inflammation; and lastly, of the veins and the means by which the motion of blood through them is accomplished. In the fifth and last chapter, on the action of the blood-vessels in the reception and separation of materials, the author treats of absorption, endosmose, the effects of poisoning, cutaneous absorption, and exudation.

The third section, on the lymph and lymphatic vessels, he begins with an account of the physical, chemical, and physiological properties of the lymph, deduced not only from the observations of his predecessors, but from lymph which issued from the lymphatics of the foot of a person who was under treatment in the Clinico-Surgical Establishment of Bonn during the winter of 1831–1832, from a wound on the dorsum of the foot. In the second chapter he gives an account of the origin, course, and structure of the lymphatic vessels, according to the most recent observers, Panizza, Meckel, and Weber; and in the third chapter, on the action of the lymphatic vessels, he describes the phenomena, and considers the evidence of lymphatic absorption, takes a view of the causes to which it has been ascribed, and closes with a short sketch of the changes which the lymphatic fluids undergo during circulation through the vessels, and observations on the motion of the lymph, its velocity, and the circumstances by which it is regulated.

In the second book of his work, which is devoted to the consideration of the organic chemical changes effected by the fluids and the organised parts, Dr Muller treats in four successive sections of respiration, nutrition, secretion, and digestion.

In the first section the physiology of respiration is explained in the following order; *first*, respiration in general, embracing a view of the atmospheric constituents necessary to the due performance of respiration; *secondly*, a philosophical view of the organs of respiration in the different classes of the animal kingdom, from the tracheal tubes of insects, and the gills of the mollusca and fishes to the bladder-like lungs of the reptiles, and the vesicular lungs of the birds and mammiferous animals: *thirdly*, a view of the respective phenomena of respiration in air and in water; *fourthly*, an examination of the changes in the arterial and the venous blood effected by respiration; *fifthly*, a view of the chemical process of respiration; and *sixthly*, an account of the motions of respiration, the influence of the nervous system and nervous branches on these motions, and some observations on the cause and mechanism of the first respiration.

The second section, on nutrition, growth, and reproduction, contains an elaborate discussion of a curious but very obscure and difficult subject. In the first chapter, on nutrition, the author begins with an account of that process so far as it is understood by comparing the different structures with the globules of the blood, and the capillary vessels, as the source and channel of supply and reparation, and by considering the proximate elements of the tissues and the chemical constituents of the blood. He does not allow that the globules of the blood can themselves pass out of the vessels, and form the integrant parts of the tissues; because they are compound bodies, and are larger than the primitive fibres of the nerves and muscles. Thus, he remarks, the globules of the frog are from five to eight times larger than the primary fibres of its muscles; and those of the rabbit are from five to six times larger; while the primary fibres of the nerves, which are thicker than the muscular fibres, also disagree in proportion with the globules and their *nuclei*. Farther, as the ultimate atoms of the blood are in the amphibia not globular, but elliptical, and in the salamander even flat, how, he asks, can the primary fibres of the muscles and nerves consist of such bodies?

In the further prosecution of the subject he is disposed to think favourably of the opinion, that the matters destined to nourish the organs may pass through the walls of the capillary vessels, and that nutrition is effected by the minute particles of the organs, in the meshes of the capillary net-work, attracting the fluid parts of the blood, and, by their giving, by the same channels, materials to the blood. Wilbrand's notion of the conversion of blood into minute vessels, he maintains to have been formed without regard to the results of microscopic observations.

He subsequently considers at length the doctrine of the incessant interchange of materials in the substance of the organs, both in the fluid and solid parts, especially in the nerves and in the bones; and concludes the chapter with a view of the facts which favour the idea of the influence of the nerves upon nutrition.

In the second chapter, on growth, he treats, first, of that by intussusception, or the reception of the new materials in the interstitial parts of the organs, and secondly, of that by apposition, which is principally confined to non-vascular parts, as the nails, hair, epidermis, and teeth.

The third chapter is devoted to the subject of the regeneration of parts. This he begins by a view of the facts and phenomena of the regeneration of lost or injured parts in the invertebrated animals, as in the MOLLUSCA, INSECTA, CRUSTACEA, and ARACHNIDES; and in a few of the reptiles, as in the Salamander, in which the legs are regenerated. He then proceeds to consider the regeneration of the tissues, first without inflammation, and secondly, with that process, either simply exudative, or suppurative. Under the head of repair with inflammatory exudation are considered the regeneration of the soft parts, especially those containing much cellular membrane, generally, that of the cartilages, the fibrous tissues, the bones in fracture and other injuries, the serous membranes, the mucous membranes, the glands, the nerves,—at great length, and the brain and spinal marrow.

Secretion, the subject of the third section, is treated under the following heads. I. The secretions in general, illustrated by remarks on the intracellular secretion, the deposition of fat in the adipose tissue; the phenomena of the secreting membranes, as the serous, the mucous, and the cutaneous; and those of the glandular secretions. II. The internal structure of the glands, giving a most perfect view of the general anatomy of these organs, from all the best anatomists, from Ruysch and Malpighi, down to Schumlansky and the learned and accurate work of the author himself—the whole concluded with a general view of the results expressed in seventeen aphoristic paragraphs. III. The process of secretion, embracing its causes, the influence of the nerves, the changes or oscillations which it undergoes, and the excretion of the secreted matters.

In the fourth section digestion comes under consideration, and is explained in the following order. I. Digestion in general, with a view of the alimentary articles arranged according to their chemical constitution, with some remarks on the relative physiological effects of vegetable and animal aliment. II. The digestive organs, comprehending a general view of the alimentary canal, its constituent membranes, and the muciparous follicles. III. The motions which it undergoes, deglutition, motions of the œsophagus and stomach, rumination, vomiting, and the motions of the intestinal tube. IV. The digestive fluids, viz. saliva, gastric juice, bile, pancreatic juice, and intestinal fluid. V. The changes undergone by aliments in the intestinal canal, containing, with a full and detailed account of the experiments of Dr Beaumont on his patient St Martin, the theory of gastric digestion, and a correct view of the inferences deducible from the researches of Tiedemann and Gmelin, Leuret and Lassaigne, Beaumont and Schultze. VI. Chylification, its nature, and the agents by which it is effected. VII. The functions of the spleen, supra-renal capsules, the thyroid gland and thymus gland; and VIII. The excretion of decomposed materials, 1. by cutaneous transpiration, and 2. by urinary secretion.

The third book, on the natural philosophy, as the author terms it, of the nerves, is one of great extent and importance; and though upon every part of his treatise Professor Muller has bestowed the greatest pains, it is manifest that this division has engrossed peculiar care, and the most elaborate and unremitting attention. The author, who treats the subject in six separate sections, begins not, as is the usual practice of anatomical and physiological writers with the central, but with the remote parts of the nervous system, and, from considering first the functions of these, advances progressively to the functions of the central parts of the nervous system. This course is adopted evidently because, in investigating the functions of the nervous system, as much elucidation is derived from the forms assumed by the nervous system in the invertebrated animals, it is impossible to form correct or enlarged ideas on the nature and uses and vital influence of the central parts in the vertebrated animals, and in the birds and mammalia, without understanding the manner in which life is continued, and nutrition and reproduction are carried on, in animals in which the central parts are either very much diminished or modified, or entirely awanting.

It is evidently with the view of supplying this species of information that Professor Müller observes the arrangement now specified, not only in the general disposition of this part of his work, but in each of the component sections. Thus, in the first section, on the properties of the nerves in general, he begins by explaining in chapter first the structure of the nerves, first, in the radiated animals, the lowest tribe in which a nervous system has been thought to be recognized, secondly, in the mollusca, and thirdly, in the articulated animals. He then unfolds the minute structure of the nerves according to the microscopical observations of Krause and Ehrenberg, as confirmed by his own researches, in the nerves and in the ganglions. In the second chapter, on the irritability of the nerves, he first adduces an extensive and apposite collection of facts for illustrating the operation of various stimuli, mechanical, chemical, electrical, and galvanic, on the nerves; he then takes a view of the changes induced in the irritability of the nerves by stimuli; and thirdly, he considers the degree of dependence of the nerves on the brain and spinal marrow. The third and last chapter, on the operating principle of the nerves, which contains the substance of an article by the author, in the Encyclopedical Dictionary of the Medical Sciences, on the same subject, gives a view of the facts and arguments favourable and opposed to the doctrine, that the nerves operate as electrical organs. The conclusions at which Professor Müller arrives are, that in the nerves during vital actions no electric currents take place; that the electrical energy is entirely different from nervous energy or innervation; and that the term electric current, as applied to nerves and their supposed action, is merely a symbolical or figurative expression, exactly as when we compare the operation of nervous energy to light or magnetism. On the nature of the nervous principle he allows that we are as ignorant as upon that of light and electricity, though the properties of the nervous principle are almost as well known as those of light and the other imponderable agents.

The second section, on the sensitive, the motiferous, and the organic nerves, is a very instructive and ably written essay. The author begins, in the first chapter, with a sketch of the circumstances which led to the discovery of the distinction between the sensiferous and motiferous nerves, and an account of the sensiferous and motiferous roots of those of the skin and their mode of action. Then follows a view in chapter second, of the sensiferous and motiferous properties of the cerebral nerves. These he first distinguishes into the four following orders; 1. Pure sensitive nerves, as the olfactory, optic, and auditory nerves; 2. Pure motive nerves, as the oculo-motor, the trochlear, and the abducent nerve; 3. Mixed nerves with double roots, as the *nervus trigeminus*, or fifth pair, the glosso-pharyngeal, the pneumogastric with the accessory, and in several of the mammalia, the hypoglossal nerve; and 4. Mixed nerves with single roots, which, though motiferous, contain sensiferous fibres, by reason of their connection with sensitive nerves. He then traces the physiological history of the two last orders,—first, that of the mixed cerebral nerves with double roots, embracing the history of the trigeminal nerve or fifth pair, the glosso-pharyngeal nerve, and the accessory nerve; and secondly, that of the nerves originally motiferous, but which in their course receive sensiferous fibres, by means of their connection with other nerves, as the facial and hypoglossal nerve. The third and last chapter in the section, gives an interesting view of the physiological properties of the sympathetic nerve.

In section third, Professor Muller enters on the explanation of the mechanics, as he calls it, of the nervous principle. By this he understands the consideration of the laws by which the operation of the nerves is regulated, or the knowledge of the mode of action of the nervous principle. This section would puzzle somewhat most English physiologists, as the mode of inquiry is such that they would have for it little sympathy. The author, beginning with the question of, whether the nervous principle is susceptible of motion, yet not forgetting the admission already established, that of the nervous principle we know nothing, yet may study its effects exactly as we study those of light, heat, gravity, or any of the other imponderables or affections of matter, maintains that various phenomena show the nervous principle to be susceptible of motion, and that the nerves are conductors of this principle, and the brain or cerebral organ the motors, infers that the imponderable nervous fluid is either conveyed like a current, in a certain direction, by the conductor, or oscillations of this fluid are excited in the nervous fibres. In stating the different degrees of rapidity assigned by different observers to the nervous principle or fluid, he details some curious facts deduced from astronomical observation to show that the differences may depend on slight differences in the rapidity of the operation of the vision and hearing, as to consciousness. The laws which he conceives regulate the motion or transmission of the nervous principle are the following.

1. The motor power operates in the nerves only in the direction of the primitive fibres distributed to the muscles, or in the direction of the ramification of nerves, and never backwards.

2. The mechanical or galvanic irritation of a part of a nervous trunk puts in operation not the motive power of the whole trunk, but only that of the isolated part irritated, so that not all the muscles which receive branches from the trunk contract, but only those which receive branches from the irritated part of a nervous trunk.

3. A spinal nervous chord, which unites in a plexus and contributes with other spinal nerves to the formation of a large nervous trunk, does not impart its motor power to the whole nervous trunk, but only to those fibres in which it is prolonged from the trunk to the branches.

4. All motor fibres operate separate from the trunk of the nerves to the ultimate ramifications.

The laws regulating the transmission of sensations are the following.

1. When a nervous part is irritated all parts which receive

branches from the trunk are sensible of the irritation; and the same is true when all its ultimate branches are irritated.

2. The irritation of a nervous branch is accompanied with sensation, which is confined to the distribution of that branch, and not with sensation in the nervous branches, which arise from the nervous trunk above, or from the same plexus.

3. Different parts irritated in the substance of any sensitive nerve, produce the same sensations as when different terminal twigs of this part of the trunk are irritated.

4. The sensations of the most delicate nervous fibres, as those of the nervous trunk, are isolated, and are not intermixed with each other, from the extreme parts to the brain.

5. As the trunk of the nerve forms the assemblage of the nervous fibrils which are evolved in the branches, and each fibril, notwithstanding its length, is connected with the branch in one part only, and represents only a single point,—so sensation is similar whether the same primitive fibrils are irritated in the trunk, or in the branches, or in the skin.

6. A peculiar phenomenon, and which is at variance with the facts adduced, is, that though in the impression on a nervous trunk, the sensations seem to be on the external parts, still a more violent impression on the trunk, seems to be felt at the same time at the spot at which the impression is applied to the trunk.

7. The distribution of the pains in neuralgia, also according to the anatomical course of the nerve, contradicts the older theories of sensations.

8. When sensation in the extreme parts is impaired by pressure or complete division, the irritated trunk of the nerves may still be the seat of sensations, which appear to be in analogous extreme parts.

9. When the member in which a nervous trunk is distributed is removed by amputation, the trunk of the nerve, while it still retains the assemblage of the primitive fibrils, may be the seat of sensations, exactly as if the amputated member were still attached. This continues during the whole of life.

10. When the fibrils proceeding from the trunk to the branches are irritated in different places, there are not local different sensations, but at the moment of the doubled irritation a sensation of increased intensity is excited in the same parts in which the terminal fibres end.

11. In like manner, as the relative disposition of the primitive fibres at their origin from the brain and spinal marrow, where they excite sensations, is not altered, when the relative disposition of the same at their peripheral end is altered, so also the local sensations of the primitive fibrils are excited according

to the order of their origin, and not according to the changed relative disposition of their peripheral end.

12. If a part contains, by reason of nervous anastomosis, different nerves of the same kind, after the palsy of one, the other nerve cannot maintain the sensations of the whole part, and the circumference of the parts still sensible rather corresponds with the number of the still uninjured nervous fibrils.

The whole of these laws are illustrated and confirmed by an ample collection of pointed facts and arguments. The two last divisions of the chapter are devoted to the subject of the irradiation of sensations, or the sympathetic sensations, and to the mixture or coincidence of a plurality of sensations, under the latter of which heads he gives the curious experiments of Weber, formerly published in this Journal, upon the delicacy of sensations in the different parts of the arm and leg according to the distances.

In the third chapter Professor Muller treats of the reflected motions and sensations presented by the nervous system. We cannot agree with the author in regarding either the facts or the explanations of these so new as he represents them to be. Most of the facts, indeed, have been long known, and the doctrine was more or less distinctly indicated by Prochaska, Abernethy, and more fully by Sir Charles Bell; and we are rather astonished that, in treating the subject, the name and distinctions of the latter physiologist are never mentioned.

The fourth chapter is devoted to the explanation of the different actions of the sensitive and motiferous nerves. The fifth chapter treats of the laws of operation and conduction observed in the phenomena of the sympathetic nerve. These he represents to be of three kinds,—involuntary actions, sensorial operations, and organic operations. The sixth and last chapter of the section, on sympathetic sensations and actions, is long and important, and we would willingly give an analysis of it did our limits permit; but the truth is, that this, like many other parts of the work, would require to be studied at large, without abridgement, in order to be perfectly understood.

In the fourth section, on the peculiarities of individual nerves, the author treats in two chapters, *firstly*, on those of the sensitive nerves, viz. the nerves of general sensation, the nerves of taste, the olfactory, the optic, and the auditory nerves; *secondly*, of the peculiarities of other nerves, viz. the various nerves of the eye and its appendages, the fifth pair, the facial nerve, the glosso-pharyngeal, pneumogastric, the accessory, the hypoglossal, and the great sympathetic nerve.

The fifth and last section, on the central parts of the nervous system, embraces a great portion of curious and instructive information on the cerebro-spinal or central nervous organ, and the nerves connected with it. The author pursues his usual method of elucidation, and after some judicious remarks on the cerebro-spinal axis generally, he begins by describing the anatomical constitution, and physiological powers of the spinal marrow, first as a conductor of the nervous principle, or its oscillations, and secondly, as part of the central organ to which all the external impressions must be referred, and from which many motiferous impulses must proceed. In the latter capacity he represents it, with the *medulla oblongata*, to possess the faculty of reflecting to the motiferous nerves the sensorial irritations from the sensitive nerves, yet without itself being sensible, to be a sort of central source of motion, and to regulate the energy and vigour of the different muscular actions.

In the third chapter he treats of the brain, first in the vertebrated animals generally; secondly, of the powers of the brain and the mental energies in general; thirdly, of the *medulla oblongata*, the parts of which are described according to the distinctions and method of Burdach; fourthly, of the *corpora quadrigemina*; fifthly, of the cerebellum; sixthly, of the cerebral hemispheres; and in the seventh place, of the mechanism of the brain and spinal marrow, and its influence on the motions and actions of the voluntary muscles.

The foregoing sketch contains a mere analytical view of the various subjects treated by the author, in an able and masterly manner, in upwards of 840 closely-printed octavo pages; and may serve, in the meantime, to communicate some idea of the method and order which Professor Muller observes in discussing the various and often obscure and complicated questions in human physiology. To attempt a detailed account even of any of the parts of its contents is impracticable within the limits prescribed to such a notice as the present. And to notice all the novelties brought forward, and the rectifications introduced in the doctrines of physiology, would make a reasonably well sized volume. At some future period, however, if opportunity serve, we may bring some of the subjects discussed more fully and in a more detailed form before our readers. Meanwhile, the information contained in this volume is so copious and accurate, and conveyed in a manner so clear and methodical, that we think it cannot long remain confined to the original, and will very speedily appear in a English translation. While at present the work cannot fail to be studied with interest and attention by all the studious members of the profession, and all those who know that science and theory ought never to be separated from art and practical applications,—it will then be accessible to the great body of the profession, and give them a taste, we doubt not, for precise and methodical views on physiological subjects.

Art. VII.—*Encyclopäedie der Gesammten Medizinischen und Chirurgischen Praxis, mit Einschluss der Geburtshülfe, der Augenheilkunde und der Operativ Chirurgie. In verein mit mehreren praktischen Aerzten und Wundärzten bearbeitet, und herausgegeben* Von Georg Freidrich Most, Doctor der Philosoph, u. s. w. Zweite vermehrte und verbesserte Auflage. Erster Band, A.—Humectantia. Leipzig, 1836. 8vo. secte 1048.—*Encyclopædia of Collected Medical and Surgical Practice, including Midwifery, Diseases of the Eyes and Operative Surgery.* Redacted and edited in connection with several practical Physicians and Surgeons, By George Frederic Most, Phil. M. C. D. Second enlarged and improved edition, First Volume. A.—Humectantia. Leipsig, 1836. 8vo. Pp. 1048.

This work, which embraces every practical department of medical science, including not only medical and surgical pathology and therapeutics, but midwifery, ophthalmic surgery and operative surgery, promises to be one of the most comprehensive and useful of the kind. Hitherto the first volume only, which appeared first in 1834, and in the present enlarged and improved edition in 1836, at Leipsic, has reached this country. But as a pretty just idea of the merits of the work may be formed from the present volume, we shall not scruple to notice shortly its general character.

In the preface to the present edition, we are informed that the whole of the first impression was exhausted in Germany within the space of eighteen months, a decisive proof of the merits of the work; and it was further translated into the Dutch language, and published at Amsterdam in 1836. This circumstance, while it demonstrated the necessity of a new edition, afforded the opportunity of enlarging and improving the work, by rendering several of the articles more complete, and by the addition of others on subjects not treated in the first edition. A large proportion of the articles has accordingly been amplified and improved; to others, especially the ophthalmic articles, important additions have been made; and in other instances new essays have been inserted. These additions have very materially improved the work, both as a book of reference and likewise as a source of information.

To the work is prefixed a judicious and learned introduction, in which the editor explains the reasons for the publication of a work in the alphabetical form, makes sundry critical remarks on systems and theories of medicine and their promulgators, and at length informs the reader that his dictionary comprehends the following subjects in practical medicine.

1. A detailed system of Special Pathology and Therapeutics of all internal acute and chronic diseases, with particular reference to semiotics, etiology, diagnosis, and the most approved remedies and medicinal formulæ for treatment, corroborated throughout by short notices and communications from personal experience. 2. A detailed system of Medical Surgery (Surgical Pathology the author means), including the whole of operative surgery. 3. A short view of midwifery and ophthalmology with reference to the operations of most frequent occurrence. 4. A short system of general pathology and therapeutics in the usual sense of the term. 5. The general principles of materia medica in a practical point of view; and 6. and lastly, a short view of the general and special pathology and therapeutics of mental disorders.

These several objects, we are happy to say, the editor has accomplished with great success. As the residual point of his introduction shows that he understands clearly the relative position of the different elementary and practical branches of medical knowledge, so the performance of the work itself bears ample testimony to his skill in carrying the object into effect. The present volume extends from the articles *Abarticulatio* and *Ablactatio*, to that of *Humectantia*, embracing in the course of 1048 pages octavo, an immense number and variety of essays on all the intermediate subjects in medicine, surgery, and midwifery, which show a degree of extensive, and, on the whole, accurate information and sound views, which reflects both on the editor and contributors the highest credit. The majority of the articles is written by the editor; and of the others, all are written by individuals well acquainted not only with medical, surgical, or obstetrical practice generally, but with the particular department undertaken; and to each written by contributors the name is attached at the end. In whatever cases the editor found it requisite to make any addition to any article, the additional matter is inclosed within brackets, or, if considerable, it is placed at the end like an appendix. In many instances to the close of articles is attached a short list of the principal works on the subject.

Upon the whole, this work is composed in a manner so scientific, and with such extensive and perfect knowledge of the subject, that while it is one of the most learned, it promises to be one of the most useful of the class of medical encyclopædias. Though the individual essays are not lengthened, they always furnish ample, correct, and satisfactory information. As examples of the justice of this opinion we may mention the articles, *Abscessus*, *Amputatio*, *Arthritis*, *Atrophia*, *Cancer*, *Cholera*, *Febris*, *Fungus*, *Galvanismus*, *Gangræna*, *Gonorrhœa*, *Hæmorrhagia*, and *Hernia*.

It is in general a leading character of these articles that they contain correct and sound views, both theoretical and practical, of the present state of medical and surgical opinion, and that the editor has assigned to the proper source any merit in contributing to the advancement of medicine and surgery as a science, or to its improvement and perfection as an art.

It is singular, however, that in the article *Decapitatio sive Amputatio Epiphysium*, *Resectio Articulorum*, by Ch. J. D. Wiedow, devoted to the consideration of the question as to propriety of removing diseased articular surfaces, the circumstances which determine its admissibility, and the best mode of performing the operation, no mention is made of the name of Mr Syme, Professor of Clinical Surgery in the University of Edinburgh, to whom this operation is assuredly in this country under greater obligations than to any other surgeon in modern times. This omission, it is to be hoped, the editor will supply in a subsequent edition.

Art. VIII.—*The Works of John Hunter, F. R. S. with Notes.* Edited by James F. Palmer, Senior Surgeon to the St George's and St James's Dispensary; Fellow of the Royal Medical and Chirurgical Society of London. In four volumes, illustrated by a volume of Plates in 4to. Vol. i. London, 1835. Pp. 643. Vol ii. London, 1835. Pp. 448.

John Hunter was one of those eminent and talented individuals whose mental energies enable them to rise above the age in which they live, and who accordingly effect, in the departments of science which they cultivate, changes and improvements, the full value of which cannot be appreciated during their lifetime. Any person, indeed, who contemplates in the Royal College of Surgeons the labours of that indefatigable man in comparative anatomy, and every thing which could elucidate the mysteries and extend the boundaries of physiology and its applications, must be struck with the fact, that at that period one individual had the courage and perseverance to accomplish so much. The conception even of such an undertaking was at the time in the highest degree original; and when we consider how few would feel any sympathy in such pursuits, how scanty and limited evidently were the means of prosecuting them with success, it must be admitted that the mind of Hunter must have possessed almost a prophetic power in fore-seeing the nature and extent of the benefits his services were to render to medicine and surgery, and of the celebrity which they were to confer upon his name.

To the actual labours of Hunter, his written works bear but a small proportion; and, however able those were which he published in his lifetime, and the one which appeared after his death, they scarcely enable us to form a just idea of his merits. It is in the Museum collected by his diligence, and in the descriptive accounts of the objects preserved, that physiologists must endeavour to form correct notions of the value and amount of his services. This circumstance renders the destruction of these manuscripts by Sir Everard Home so much the more to be deplored, that no means now remain of rendering to Hunter the merit to which his extraordinary services entitle him.

Of the life, character, actions, and writings of a man such as John Hunter, the rising members of the profession cannot know too much; and if he had faults, of which the life in the present volume gives abundant proof, yet, by the imitation of his industry and perseverance in the acquisition of correct knowledge, the young medical practitioner may be taught to employ his spare time to advantage, to think for himself, and to acquire confidence in the irresistible effects of unremitting application.

But even this is not the full amount of the benefit accruing from the perusal of the works of such a man. The inquisitive mind must be gratified in recognizing in several of these writings the rudimental germs of many doctrines which are now familiar to all, and in tracing the steps by which genius, combined with industry and steadiness, brings order out of confusion, simplicity out of complex and intricate processes, and arrives, by long and sometimes wearisome inquiries, at general and essential results. Shall we add, that the treatise on the Blood and Inflammation is much more spoken of than studied, and the knowledge of many of the doctrines therein promulgated, often indeed not very clearly, requires to be still more generally diffused among practitioners than it has hitherto been.

To accomplish these objects, one of the best means is certainly a collected edition of the whole of the published writings of John Hunter, in a form so commodious as to be accessible to the great majority of readers. Such a proposition includes not only his treatises on the teeth, the venereal disease, and the blood and inflammation, but all those separate memoirs and essays which are scattered through several different periodical works and transactions.

The present edition is exactly such as is calculated to fulfil these different objects. The editor, Mr Palmer, shows, in a judicious and well written preface, that he understands perfectly the nature of the duty which he has undertaken. He is evidently well acquainted with the character and writings of Hunter, and has formed a very just estimate of his merits. He has also been fortunate in the selection of able coadjutors. In a well written and interesting biography of John Hunter, by Mr Drewry Ottley, the reader is not only made acquainted with several facts in the history, and several features in the character, of Hunter not previously known, but he is taught not to regard the subject of the memoir with indiscriminate admiration, but to distinguish the genuine and characteristic merits of the mind of Hunter, amidst several blemishes and defects.

Besides this life, the first volume contains his Lectures in Surgery, now published for the first time, with various notes by the editor, either supplying deficiencies, or placing the information therein contained on a level with that of the present day.

The second volume contains the Treatise on the Natural History and Diseases of the Human Teeth, and that on the Venereal Disease; and when we say that the former is under the superintendence of Mr Thomas Bell, and the latter under that of Mr George G. Babington, our readers will perceive that the editor has taken every means to insure the utility of his publication. Both of these gentlemen have added numerous valuable notes, either in explanation of principles too obscurely announced by the author, rectifying the few statements which further experience has now shown to be erroneous, or in supplying deficiencies which have naturally resulted from the progressive advancement of physiological and pathological science. In the Treatise on the Venereal Disease, where perhaps this species of commentary was most needed, Mr Babington has repeatedly introduced valuable notes bringing the pathological principles and therapeutic measures to the simplicity and energy of modern surgery. At the same time, it is proper to mention, that all this is kept apart, and the text of Hunter is now presented to the profession in the purest form yet known.

We shall look with impatience and anxiety, yet not without well-grounded confidence, for the completion of this first edition of the *whole* collected works of John Hunter. If finished, as it has been commenced, it will then constitute one of the most valuable works which the physiological surgeon can possess; one in which the junior members of the profession will always find useful instruction, and one which the oldest and most experienced will be unable to peruse without interest and advantage.

[Supplement to the Original Communications.]

Remarks on the Literary History of Uterine Hemorrhage, proceeding from attachment of the Placenta to the Os Uteri.

By Robert Renton, M. D. Fellow of the Royal College of Physicians, Edinburgh.

Hemorrhage from the impregnated uterus, with the means best adapted for its alleviation or suppression, has, from its important results on the animal economy, for a long period, naturally engaged much attention, especially from those whose practice has been more particularly restricted to the obstetric branch of our art. The subject has indeed been so fully and ably discussed in the writings of foreign and British authors, and the treatment recommended in certain contingencies so generally agreed to and acted upon by every well-informed medical man, that on a theme so well nigh exhausted, little else remains for the inquirer of the present day, than to carry into effect the rules of practice so well inculcated by some of the ancient authors on midwifery.

The minds of the younger members of the profession cannot, however, be too often or fully impressed with the great importance of this subject, and of the high moral obligations enjoined and required of them when entering upon the responsible duties of practice. Indifference or ignorance on a subject involving the life of one or two individuals, and where the means of instruction are within the reach of every one, is not only culpable, but highly criminal. It is the bounden duty, then, of every one, when about to engage in the arduous duties of this branch of the profession, to acquaint himself thoroughly with the rationale of uterine hemorrhage, that his practice in this species of hemorrhage may be directed and regulated by the application of a general leading principle, so that when summoned to the bed-side of his patient he may come prepared to act with that promptitude and decision which the emergency of the case may demand.

In submitting this short communication, however, to your notice, it is not my intention to enter on an exposition of the principles or practice of uterine hemorrhage. My object is to give a very succinct analysis of the works of the older writers who have treated of the subject, by which we may be enabled to make a correct estimate of their respective merits, and at the same time to ascertain precisely the amount of the obligations that may be due to more modern authors. A short literary history of uterine hemorrhage, if not strictly useful, may be perhaps not devoid of interest. I am, however, quite ready to acknowledge that, but for the circumstance of a controversy being now maintained regarding the comparative claims to originality of M. Levret, Dr Smellie, and the late Dr Rigby of Norwich, on the subject of uterine hemorrhage, I should not now have had to claim a share of your indulgence. But observing that in that discussion no mention has been made of an individual, who lived long anterior to the time of Levret, Smellie, or Rigby, and who has left behind him undoubted proofs of his having conceived the most accurate notions of the cause, with excellent practical rules for the treatment, of this kind of uterine hemorrhage, I have been induced to attempt the present task. In undertaking it, I am but rendering an act of justice due to the memory of that individual, in my endeavour to place his name in the position to which his talents and his skill so justly entitle him.

To be enabled to form a just notion of the obligations which the profession and the public owe to Levret, Smellie, and Rigby, for their alleged discoveries of the causes and superior treatment of uterine hemorrhage, it is indispensable that we should know the exact amount of knowledge possessed by their predecessors on the subject. De Graaf, in the 17th century, in his Treatise De Mulierum Organis, says at page 291, "Placentæ situs uteri a variis varie describitur; alii eam anticam uteri sedem, alii posticam, alii dextram, alii sinistram, occupari scribunt." After quoting a passage from Fallopius he proceeds: "Quid vero de illo sentiamus, paucis expediemus, dicendo certum ac determinatum placentis locum haud assignare posse."

The anatomical fact of the placenta being attached to any part besides the *fundus* of the *uterus* seems to have become known at that period, although no practical inference was deduced from it. The individual who first ascertained the practical fact of the adhesion of the placenta around the circumference of the *os uteri*, and its detachment giving rise to alarming and fatal discharges of blood during the latter months of pregnancy, is Paul Portal. It was distinctly stated by Portal in his Traité des Accouchemens, published in 1685. Portal, in the views which he had formed, and the practice which he pursued in cases of uterine hemorrhage, was a century in advance in his knowledge on this subject. With the exception of Giffard and Rœderer, all contemporary and subsequent writers, including the celebrated names of Mauriceau, Amand, Peu, Puzos, la Motte, and Deventer, till the time of Levret, seem to have been seized, as it were, with the spirit of unbelief, or were as ignorant as if Portal had never existed, nor had written a word on such a subject. In his treatise Portal relates six cases of uterine hemorrhage, occasioned by the separation of the placenta from the *os uteri;* and towards the conclusion of one of the cases, he states, that in 1683 he had been called to see five cases of a similar description. Portal has given such distinct accounts of these cases, and of his method of treatment, that the reader who wishes a fuller description must consult the work itself. I cannot, however, refrain from making one extract. It will be found in the 51st case. After describing the exhausted state of the patient from hemorrhage, he proceeds to effect her delivery, having formed his fingers into a sort of *speculum matricis*, "J'ouvris cet anneau en telle sorte, que je n'eus point de peine à porter ma main dans le fond de la matrice, oú, en la glissant je sentis le placenta qui environnoit en dedans l'orifice interne; ce qui estoit la cause de la perte de sang, parceque lorsque l'ouverture de cet anneau se faisait, le placenta qui se trouvait contigu à cet orifice, à cause de quelque contiguite qu'il a avec la matrice, à l'endroit oú il y est adherant, cet orifice venant à s'ouvrir, il se divise, et en mesme temps les vaisseaux venant a se diviser, cela fait que le sang de la malade se perd en abondance; et si elle n'est promptement secourue, elle meurt bientot."

After perusing this passage, no person can have the slightest difficulty in believing that Portal, in 1683, knew as much on the subject of uterine hemorrhage, occasioned by the displacement of the placenta from the *os uteri*, and the practice necessary for its suppression, as we do at the present time. It is to him unquestionably that we are indebted for our knowledge on the subject. It is in vain that I have perused the works of his contemporaries and immediate followers for the relation of a well-marked case of adhesion of the placenta to the *os uteri*, and its consequent detachment as the cause of the hemorrhage. They relate many such cases, and treated them often with great good sense; yet they never offer a correct explanation of the cause of the hemorrhage, which they undoubtedly would have done, had their knowledge on the subject been equal to that of Portal's. Their general belief seemed to be that the placenta in all cases of hemorrhage had been separated from the *fundus uteri.**

The first practical writer after Portal who has distinctly related cases of hemorrhage, from the separation of the placenta from the *os uteri* will be found to be Giffard, who mentions several in his "Cases in Midwifery," a work revised by Dr Hody, and published in London in 1734, and referred to by Dr Smellie in his introduction to his treatise on the Theory and Practice of Midwifery, as "containing many useful remarks and histories of cases." To show how clearly Giffard understood one of the causes of uterine hemorrhage, and the necessity of effecting delivery as speedily as possible, I shall select a part of two of the numerous cases which he relates. One of them occurred in February 1729–30, and will be found in the 116th case.

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* An account of a dissection is given of a gravid uterus, in the Memoirs of the Royal Academy of Sciences at Paris in 1723; the fatal hemorrhage was owing to a partial separation of placenta from the *os uteri*.

After pointing out to his patient the necessity of a speedy delivery, Mr Giffard says, "I passed up the two fore-fingers of my left hand into the vagina, which I found in some measure stopped up with coagulated blood; this I removed, and then being able to touch the *os internum*, I found it dilated wide enough to admit the ends of three or four fingers, which I passed into it, and by spreading them endeavoured to dilate it. This had so far the desired effect, that I made my way to pass in my whole hand. The first thing I met with was the placenta, which I found closely adhering round the *os internum* of the *uterus*, which, amongst many other instances, is a proof that the placenta is not always fixed to the bottom of the uterus, according to the opinion of some writers in midwifery. Its adhering to the *os internum* was, in my opinion, the occasion of the flooding, for, as the *os internum* was gradually dilated, the placenta at the same time was separated, from whence proceeded the effusion of blood."

The concluding paragraph of the other (115th) case is in the following words: "I cannot implicitly accede to the opinion of most writers in midwifery, which is, that the placenta always adheres to the *fundus uteri*, for in this, as well as many former instances, I have good reason to believe, that it sometimes adheres to or near the *os internum*, and that the opening of it occasions a separation, and consequently a flooding."

It may be here remarked, that the narrative by Giffard corresponds so closely with that given in one of the cases related by Paul Portal, especially in the circumstance of the mode in which the fingers were carried into the *os uteri* and through the placenta, that it must be either regarded as a very close coincidence in thought and expression, or as evidence that Giffard had perused the cases of Portal, yet did not choose to own the fact.

On one point, however, Giffard deserves to have justice done him. Dr Rigby, in the third edition of his work, states, that although "Giffard has more than twenty cases where the placenta was found at the *os uteri*," adds, "but he plainly supposes that it had not been originally fixed there." No person, I believe, who peruses the extracts above quoted, can draw from them such a conclusion. Wherever Giffard had got his knowledge, he shows that he was aware of the fact, that the placenta might be implanted over the *os uteri*.

After this period, the opinion of the placenta being occasionally attached to the *os uteri* gained ground, anatomical proofs were adduced, and detached cases were published containing additional testimony of its accuracy. The next practical author is Rœderer, Professor of Midwifery at Gottingen, and a contemporary of Levret. Professor Rœderer in his treatise entitled *Elementa artis obstetriciæ*,* a work not more distinguished for the vigour of its style, than for the sound practical views it contains, has given a most graphic description of uterine hemorrhage occasioned by separation of the placenta from the *os uteri*. At page 317, Rœderer says, "Istud autem profluvium ex uteri vasis oritur, ob placentæ vel partem, vel integrum corpus solutum hiantibus: quod quidem a deducto segmento uteri inferiori, tempore partui vicino, evenire solet: quapropter vehementissimus torrens eo tempore prosilit, quo dolorum actio majori vi istam distractionem facit. Placentæ etiam spongiosum corpus sæpe ante factam hæmorrhagiam tangitur, et firma ejusdem uterique ad inferius segmentum, cohæsio in hoc partu percipi digitis potest"

The perusal of the above extract must satisfy every impartial person that Rœderer's views on the subject were clear and most distinctly expressed.

About this period, or shortly after the publication of Rœderer's works, M. Levret's treatise entitled "Traité des Accouchemens" appeared, and in a supplement to his work entitled "des Accouchemens Laborieux," he enters very fully into the subject of uterine hemorrhage, proceeding from the placenta being detached from the *os uteri*. Levret does not claim for himself the credit of being the discoverer of the fact; on the contrary, he with perfect candour admits that Portal had long before him stated the circumstance in the work before referred to. And after noticing the instances given by Portal as cases of placental presentation and adhesion to the *os uteri*, Levret, in confirmation of them, adds other cases, two of which had occurred to him in his own practice, while the mention of others had been supplied to him by his friends. It is true that Levret has bestowed great pains on the subject, and has unquestionably the merit of having directed more particularly the attention of the profession than any of his predecessors had done, to the fact of uterine hemorrhage occurring in the latter months of pregnancy, being often occasioned by the implantation of the placenta over or near the *os uteri*.

Smellie, who in point of time comes after Levret, was quite aware of the fact, that uterine hemorrhage was often occasioned by the detachment of the placenta from the *os uteri*. Passages from his work might be quoted in proof of this.

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* Published at Gottingen in 1753.

Fully twenty years after Smellie's work had appeared, Dr Rigby of Norwich published his essay on uterine hemorrhage, which, when considered in a literary point of view, is remarkable for the perspicuity and simplicity of its style. Whatever opinion may be entertained of that treatise, regarding some points of practice recommended in it, or of its author in meriting the designation of a discoverer, it cannot be denied that the profession in England has been much indebted to Dr Rigby for his having in that essay directed public attention to the subject of uterine hemorrhage. To Levret the profession in France are under still deeper obligations, not only for his timely agitation of this subject, but for many other contributions relating to the art of midwifery.

After this brief summary, it is surely unnecessary for me to enter upon the task, at all times neither a very pleasing nor an instructive one, of apportioning to each author the share of claim to originality on this subject to which he may be entitled; the more so as the reader has had laid before him the materials from which he may be enabled to form his own opinion, and can thus "render unto Cæsar the things that are Cæsar's."

Before concluding this meager sketch, allow me briefly to recapitulate the facts of the case. Portal, before the end of the seventeenth century, had stript the subject of uterine hemorrhage of all novelty, by showing distinctly the necessary, or unavoidable, as it was afterwards called, hemorrhage that must insue from the implantation of the placenta over the *os uteri*. Levret, more than half a century afterwards, confirmed the doctrine and practice of Portal. Giffard in 1734, relates several cases of uterine hemorrhage produced by dilatation of the *os uteri*, detaching the placenta from its surface. Smellie, who published his work more than twenty years afterwards, relates similar instances, and speaks of Giffard's collection as containing many interesting cases. The inference from the above statement, which cannot be impugned, is obvious, that except Portal, none of those authors possess a tittle of claim to originality on that subject. How far Dr Rigby's pretensions to originality are supported or invalidated, no one, I conceive, can be at any loss to decide; but beg to refer the reader, who may be desirous of further information, to the correspondence which has lately taken place on that matter between Dr Hamilton, the eminent Professor of Midwifery in this University, and Dr Edward Rigby, of London.

26, *Howe Street*, 21*st June*.

PART III.

MEDICAL INTELLIGENCE.

ANATOMY.

1. *Microscopical Observations on the Internal Structure of the Nerves and Central parts of the Nervous System.* By Dr JOSEPH BERRES, Professor of Anatomy in the University of Vienna. (*Medizinische Jahrbuch des k.k. Osterich Staates.* xviii. *Bandes in Neuester Folge* ix. *Band.* 2d Stuck. Wien, 1835.)—Professor Ehrenberg endeavoured to show, by microscopical observation, the tubular structure of the brain and nerves, or that they consisted of hollow cylinders; but this view was opposed by Professor Krause, who, while he admitted the fibrous structure, denied that they were hollow, and, on the ground of microscopical observation, maintained the cerebral and nervous primitive fibres to be solid. The observations of Professor Berres, while they confirm the general accuracy of the inference of Ehrenberg as to tubular structure, show that this structure is not so simple and uniform as it was represented to be by Professor Ehrenberg.

Observations and researches continued for several years on the nature of the organic substance, enabled Professor Berres to discover in this department peculiarities which probably, on further application, might furnish an important key to unfold many mysteries in the science of pathology. He finds that the nerves and brain consist of cylindrical canals or *tubuli*, and vesicles or *ampullulæ* connected in various modes; and the relation of the mutual arrangement and connection of these constituent parts (*tubuli; vesiculæ*) of the nerves and the brain, is otherwise very different. Sometimes the vesicles or *ampullulæ* are continuous with, or inserted into the *tubuli*, and incorporated with their substance; sometimes they are attached like the sprouts of trees to the buds; or the *vesiculæ* form small or large clusters like the follicles in the intestinal canal; or there lies in individual nerves, a great accumulation of *vesiculæ* on the fine-drawn tract of the nervous *tubuli*; and in many nerves, between the bundles of the nervous *tubuli*, are inserted *vesiculæ* of larger size, quite similar to those of the cellular membrane in arranged rows, or in heaps laid over each other. Lastly, in the cortical part of the brain the observer discovers the sprouts or terminal branches of the staffwreath covered with an unusually large quantity of *vesiculæ*. These different peculiarities of the *vesiculæ* are represented in a lithographic engraving.

The diameter of the *tubuli* and *vesiculæ* is even very different. The *vesiculæ* in the line and division of the most slender tubes are the smallest of all, and are only $\frac{1}{1000}$ part of a Vienna inch in diameter. The *vesiculæ* found in the cortical substance, and attached to the sprouts of individual sensitive nerves, form the second sort, are somewhat larger, and are about the $\frac{1}{500}$ part of a Vienna inch in diameter. A third sort of the nervous *vesiculæ* communicates with some parts of the brain, and with the common sensorial nerves, and are in general about $\frac{3}{1000}$ of a Vienna inch in diameter. The largest *vesiculæ*, which are found in the line of the nervous *tubuli*, appear to belong to the neurilema, and to present that constitution which the author names cellular *vesiculæ*, are also in intimate relation with the nervous function, as they are often and numerously inserted in different places of the nerves. These vary from $\frac{1}{100}$ to $\frac{1}{24}$ part of a Vienna inch in diameter, and are in close connection with innumerable lymphatics.

The nervous *tubuli* or cylinders occur under three different forms: 1. Certain isolated *tubuli* present in their course prominent swellings, and they appear like a string of pearls to consist of several vesiculæ incorporated with the substance of a *tubulus*. 2. The greater number of the nervous *tubuli*, especially those of the brain, observe a dendritic or arborescent division and ramification, and receive within their extremities *vesiculæ*, which are connected with the *tubuli* sometimes simply, sometimes in large clusters. 3. A certain sort of *tubuli*, which belong to the organs of motion are inclosed in slender transparent sheaths, and enter into these cylinders sometimes directly, sometimes zig-zag.

These different modes of formation of the *tubuli*, as well as the mode of their connection with the vesiculæ, led the author to distinguish these forms into natural classes, and each class into several orders, by which at the same time the function of the nerves, especially in respect to their unknown uses, is indicated, and illustrated by analogy with the nervous forms belonging to the same class.

I. Class.—The first class consists of *nervous forms* with convex bead-like cylinders or canals resembling the beads of a rosary, or those of a pearl-necklace [*Tubuli moniliformes.*] These contribute to form the higher organs of sense and individual parts of the brain. This class is subdivided into four orders: 1. The first is the *large bead-like vessels or necklace tubuli*. They are known by their considerable diameter, and by convex distensions at short spaces after each other. The complete developement of this order, Professor Berres found in the *tractus olfactorius*. 2. Second order, the large vesicular string *tubuli* with attached *vesiculæ*, with in general one-sided convex distension, and divided into several branches and twigs. These are found among other situations in the optic and olfactory nerves, and in the strands of the *medulla oblongata*. 3. Third order, the small bead-like or rosary *tubuli*. These occur in the same type of formation with the first order, but in all respects smaller. These are found among other situations in the root of the great sympathetic nerve, in the optic eminences and *corpora quadrigemina*, and in the capsule of the pisiform bodies. 4. Fourth order, the narrow-bellied large bead-like *tubuli*. These are of the whole nervous *tubuli* the most completely developed organs; being from $\frac{3}{1000}$ to $\frac{34}{1000}$ of a Vienna inch in diameter, and having at their side strongly developed *vesiculæ*, and conversely in their course one-sided, and moderately convex distensions. They are found in the auditory nerves, in the inner siliquose-strands, and in the wedge-strand in the substance of the *medulla oblongata*.

II. Class.—The second class consists of slender nervous forms, with *tubuli* and attached *vesiculæ* (*tubuli baccati.*) In this class are the smallest *tubuli*, those formed in *fasciculi*, serpentine, unramified, or with deficient shoots, with their ends opposed, and connected in different proportions with small and large *vesiculæ*. They are seated in the nerves of sense, those of taste, and all the others of these two allied functions; in several strands of the spinal marrow and *medulla oblongata*, and also in different parts of the brain. Their *vesiculæ* are never incorporated with the *tubuli*, but are merely attached to them, sometimes simply, sometimes in clusters.

These are also subdivided into four orders. 1*st*, Ramified *tubuli*, with attached slender *vesiculæ*. 2*d*, Ramified *tubuli*, with attached small or large *vesiculæ*. 3*d*, Uniform and parallel fine-drawn incurvated *tubuli*, with clustered or racemiform attached *vesiculæ*. 4*th*, Incurvated uniform *tubuli*, with inserted cellular *vesiculæ*.

III. Class.—The third class consists of nervous forms, with inserted or invaginated *tubuli* (*tubuli invaginati.*) These cylindrical canals are sometimes straight, sometimes twined zig-zag, inserted into proper slender sheaths or cylindrical investments, and in general uncovered, into the *vesiculæ*. The canals so formed, round, and from $\frac{1}{1000}$ to $\frac{1}{1000}$ of a Vienna inch in diameter, are arranged parallel to each other, and constitute by their connection the fibres of the nerves of motion.

They form three orders. The first order is the serpentine or zig-zag drawn invaginated nervous *tubuli*. They appear to belong particularly, though not exclusively, to the substance of the flexor muscles. They are very clearly seen in the *nervus hypoglossus*. The second order consists of the incurvated invaginated nervous *tubuli*, and appears to belong particularly to the extensor muscles. The third order is formed by the ramiform or branch-like invaginated nervous *tubuli*. The trunk of the vegetative nerve (the great sympathetic,) as also the gangliar portions of this system, exhibits in many parts this form of arrangement.

Lastly, the author subjoins, for the more clear understanding of the subject, an interesting tabular representation of a new arrangement of the different nervous forms, according to their natural structure; and at length shows, that in each of the higher operations of sense, a special sensitive nerve, then a feeling nerve, and lastly, one or more motiferous nerves, are called into concurrent action.

The existence of Crystals in the Intestinal Contents in Abdominal Typhus. By Professor SCHONLEIN of Zurich, in a letter to Professor MULLER. (Muller's Archiv für Anatomie und Physiologie, 1836, p. 258.)—In a small epidemic of abdominal typhus which prevailed at Zurich in the harvest of 1835, Professor Schoenlein found in the intestinal discharges of typhous patients a great number of microscopical crystals, presenting the appearance of rhombs, rhombic prisms, and the latter with the form of a rectangular pyramid.

As he found accumulated masses of the crystals in the matters, he infers that these crystals are undoubtedly formed in the yellowish crusts which cover the inflamed Peyerian glands, and which Professor Schonlein calls excrescences of the intestinal mucous membrane. These crystals were transparent as water, slightly fragile, soluble without effervescence in muriatic and nitric acids, and consisted, according to analysis, chiefly of phosphate of lime, some sulphate of lime, and a salt of soda.

In a subsequent communication of 15th April 1836, Professor Schonlein states, that he had been able to establish the presence of these crystals in the intestinal discharges of patients labouring under abdominal typhus, so uniformly, that it may be conveniently employed as a very important diagnostic mark to distinguish this disease from the changeable and often deceitful similar *febris gastrica torpida*, and *febris erysipelatosa*, which prevail at the same time with abdominal typhus, and are accompanied with copious intestinal discharges, but in which minute examination rarely shows the presence of these crystals, as they are met with in the discharges of convalescents from typhous fever.

The excrements of different sorts of diarrhœa, namely, those of the ulceration of consumptive patients, and also those of healthy persons, in which Professor Schonlein and a friend had, in more than a hundred cases, during some weeks, carried on these inquiries, have throughout shown the absence of crystals.

On the form and the chemical composition of these crystals, Professor Schonlein feels not ready to speak confidently; and in both respects there is much problematical. While Figure 3d, which is a combination of the rhomb with the rectangular prism, is by far the most frequent form of crystal, it appears to be only the half of a crystal which had been divided by section which had gone parallel with the plane. In chemical relation, it is remarkable that the fundamental form deviates from the primitive known form of the phosphate of lime, to which is to be added the circumstance, that the typhous crystals are readily soluble, not only in muriatic and nitric acid, but in sulphuric acid. On this point he states the question whether the phosphate of lime may be a dimorphous substance, and thinks that such dimorphism must depend on the genetic impulse, and that one form may belong to mineral, and the other to animal bodies.

At the time when the first part of this communication was received by Professor Müller, abdominal typhus was so rare in the hospitals, that, notwithstanding all his efforts, he could observe no pure case of the disease, that is, with intestinal ulcers. Under these circumstances, it appeared most proper to direct attention to the excrements in other diseases, and the excrements of the dead bodies brought to the theatre were assiduously examined microscopically. Professor Ehrenberg had long before observed that the meconium contains microscopical crystals, and from this he concluded, that the same crytals might be occasionally found in the bodies of adults. In the excrements of adults Professor Müller has frequently, after long search, found scattered individual crystals, and indeed in men dead under very different diseases. Among these was a case of fever, named nervous, but without intestinal ulcers, and another, in which were ulcers in the colon, but not in the ileum. The other cases were not referable to the head of typhus. The whole scattered and disseminated crystals were partly visible even with the naked eye, and others with the compound microscope. Several times Professor Müller saw right-angled tables, one at another time a rhomboidal or rhombic prism, once long four-sided prims, persistent at both ends, and acuminated. He did not see heaps of crystals as in the Figures 11 and 12. Often he searched without success for crystals in cases not typhous.

Subsequently he had twice occasion to search excrements of persons who had been treated for abdominal typhus, and once the intestinal contents of the body of a person dead from abdominal typhus, with ulcers in the ileum. Though here the crystals appeared not to be remarkably more frequent, yet we cannot attach to this much importance. In the dead bodies of very different patients crystals may be formed which were not yet present in recent excrements. From the renewed comparative observations of Professor Schonlein, Professor Muller thinks it results that crystals must occur in the excrements of typhous patients much more frequently than in other excrements.

Explanation of the Figures, Plate IV.

Figures 1—12. Crystals from the excrements of typhous patients.

The crystalline form is rhombic. Figures 1, 2, 3, 4, 5, and 6, are combinations of a rhombic prism (MM), a rectangular pyramid (PP), and a rectangular prism in Figures 1, 3, 4, and *t*, Figure 6.

Figure 8. The two sides *x* and *y* of this solitary crystalline figure sufficiently explain themselves. Figures 9 and 10, MM, appear to belong to the rhombic prism, *m* to the rectangular, while *p, p, p, p,* may be the sides of a rhombic pyramid.

Figures 11 and 12, Crystals still adhering to the excrementitial matters.

Figures 13, 14, 15, 16, and 17, are crystals of uric acid, discharged in considerable quantity in diabetic urine.

PHYSIOLOGY.

Experiments on the Artificial Digestion of Coagulated Albumen. By Professor D. J. Müller, and Dr Schwann. *On the Nature of the Digestive Process.* By Dr Thomas Schwann, (Müller's, Archiv, 1836, Nos. 1 and 2. p. 66 and 90.)—Though the experiments of Prout, and Tiedemann and Gmelin had demonstrated in the gastric fluid the existence of the acetic and muriatic acids, yet some experiments of Müller, on the operation of dilute acids on muscular flesh and coagulated albumen, rendered it very improbable that the speedy solution of the food in the stomach was to be ascribed to the operation of these acids. On the other hand, the experiments of Beaumont, which confirm the conclusions deduced by Stevens, shew that the gastric juice possesses a true solvent operation even out of the body; and from this Müller thinks it results, that the true solvent principle in efficient digestion is still unknown.

Eberle, in a work on Digestion, published at Wurzburg in 1834, announced the discovery, that though neither the diluted acids alone, nor the gastric mucus alone, possess the power of rapidly dissolving organic substances, yet this solvent power is possessed by the acid mucus, and that albumen and flesh, digested with acid mucus, or the acid extract of the mucous membrane are not only speedily dissolved, but also undergo a chemical change, in so far as the albumen loses its property of passing from the fluid to the coagulated condition by the usual reagents, and is converted into osmazome and salivin, the characteristic principle of the saliva. If these important facts be established, they afford a new example of chemical action by simple contact, and it may be conceived in how simple a manner, that is, by contact of an organic substance, so many changes of matters in the animal body may be effected. In this conjuncture, Mueller observes, vegetable chemistry affords aid to animal chemistry. The alimentary matter most extensively distributed among plants, viz. starch, is also in the first stages of the nutrition of the germ, by means of the gum existing in the germ fitted for reception and assimilative changes. The observations of Eberle, on the operation of the acid mucus on albumen and muscular flesh, furnish a complete parallel to facts long known in vegetable chemistry, and particularly employed in the economy. The discovery of Eberle has not yet received confirmation from the researches of others, and no observation, either to contradict or to verify it, has appeared. The observations of Mueller and Schwann, therefore, may be the more welcome to physiologists, that they are founded, not on a few transitory trials, but on experiments which have been several times repeated during the course of a whole year, and which have always given the same results. These experiments were performed chiefly in the course of the winter of 1834–1835.

Professor Mueller found that cubical portions of coagulated albumen, several grains in weight, which remained for a week in diluted acids, without undergoing any change, were, in less than a single day, softened and reduced to a semifluid pulpy mass by acid mucus. The only difference between these results, and those obtained by Eberle, related to the time necessary for solution; in so far as the solution of small portions of coagulated albumen required in general from twelve to twenty-four hours, although previous to this time a remarkable change on the albumen was observed. Professor Mueller also performed comparative experiments with the same quantity of acid without mucus. Several test glasses were filled with diluted muriatic or acetic acid, so that from each glass some drops of acid escaped. The same acids were added to the water containing the portions of mucous membrane employed for the other series of experiments. In both orders of glasses were put cubical portions of coagulated albumen, and boiled muscular flesh, several grains in weight, which had distinctly visible sharp edges and angles. The portions placed in the diluted acids were, after the space of from twelve to twenty-four hours, unchanged in form and appearance; and their consistence was so little diminished, that they could be crumbled into fragments only a little more easily. The portions which had been digested with acidified mucous membrane had become pulpy throughout, and had lost their edges and angles; the albumen was in its circumference mostly transparent and semifluid. Every time it was examined the albumen in the acid mucus had changed its colour. At the circumference it was uniformly transparent, while in the centre it retained its white colour. The portions of albumen in the acids retained their white colour. The flesh also had undergone analogous changes in colour and consistence. The muscular flesh in the simple diluted acids had completely retained its colour and consistence; while that in the acid mucus had become slimy, had for the most part lost its fibrous structure, and was become brown. These experiments gave Professor Mueller results so uniform, that he stated them in his lectures in the summer of 1836. In the new edition of his Manual of Physiology, he communicated nothing thereon, because he was averse to mention the subject, until he could communicate some complete information.

Professor Mueller with Dr Schwann, performed in the autumn and winter of the same year different courses of experiments, always upon the same method, in order to determine several further questions, viz. 1*st*, on the operation of the dilute muriatic, acetic, tartaric, oxalic, and lactic acids, on boiled muscular flesh and albumen; 2*d*, on the operation of acidulous extracts of the mucous membrane, in the solution of flesh and albumen; 3*d*, on the nature of the chemical change in albumen in artificial digestion; and, 4*th*, on the question, whether in artificial chymification carbonic acid is generated and the atmospheric air is altered; and has arrived at the following results.

1. Portions of albumen or muscular flesh may remain in dilute muriatic, acetic, tartaric, oxalic, or lactic acid for days, or even weeks, without presenting marks of softening or pulpy solution, even at their edges and angles; nor was the result otherwise, when the portions of albumen and flesh in these fluids were exposed for twenty-four hours to the current, from the galvanic pile. 2. Portions of coagulated albumen and muscular flesh placed in distilled water, containing slips of the fresh stomach of the calf, (the mucous membrane always used in these experiments) and acidulated with muriatic acid, lost their edges and angles, and became pulpy over the surface in the course of twelve hours, whereas smaller portions of the same substances in simple diluted acids remained unchanged, and similar portions of the same substance in distilled water, containing merely slips of mucous membrane, continued unsoftened, but began to emit a fetid odour. In the first case further, the fleshy fibres could no longer be recognized; the albumen had the appearance of softened bread-crumb; the surface of the albumen was quite pulpy, yielded to the finger, and was transparent; the centre was cheese-like, still retained its odour, but was easily broken down. These experiments were very often repeated with the same result. 3. The change which albumen undergoes in digestion by the acidulous extract of the mucous membrane is not mere solution, but a complete chemical transformation. The materials into which albumen is thus decomposed, are, as was already shown by Eberle, osmazome and salivin, the peculiar principle of saliva. 4. From various experiments, it results, that during the chymification of albumen, a quantity of oxygen gas, varying from .23 to .52 of a cubic inch, or between ¼ and ½ of a cubic inch, is absorbed, and that a very small quantity of carbonic acid gas is evolved. This Professor Mueller and Dr Schwann are disposed to view as altogether mechanical, and not contributing to any chemical change; and as the artificial digestion proceeds perfectly in shut vessels without communication with the air, he concludes that it is accomplished by simple contact with the acidulous extract of the mucous membrane.

Professor Mueller and Dr Schwann further infer that the chymifying principle of the acidulous extract of the mucous membrane, or the unknown agent of the changes effected within the stomach, operates in a manner similar to ferment in inducing fermentation, and is also similar to ferment in this respect, that as shown by Dr Schwann, a very small quantity of this principle is sufficient to the production of artificial chymification; but there is a difference in this circumstance, that in vegetable fermentation carbonic acid is formed. The artificial chymification of coagulated albumen must be viewed as a new example of chemical organic action. The peculiar nature of the chymifying principle of the acidulous extract of mucous membrane and mucus, both of which according to Eberle, operate in the same manner, is hitherto unknown. Simple acidulous mucus the experimenters think it cannot be.

This subject has been still more minutely investigated by Dr Schwann, who, from the experiments performed, and the arguments founded on them infers that the chymifying or digesting fluid contains, 1. matters precipitable by ferrocyanate of potass, 2. osmazome, 3. salivin, the principle of saliva, and 4. a peculiar digesting or chymifying principle denominated by the author *Pepsin* (*πεπτω coquo*). This digesting principle, though soluble in water doubtfully, in diluted hydrochloric and acetic acid, is destroyed by alcohol, boiling heat, and nutgall infusion. This peculiar principle, he further thinks, dissolves and digests all the matters allied to animal albumen, as muscular flesh, &c.; but the solution of coagulated casein and the other alimentary articles, as animal jelly, starch, and gum, are effected not by this principle, but simply by the free acids of the gastric juice.

CHEMISTRY.

Cyanide of Potassium, an incidental product of the process for making Cast-Iron in Blast Furnaces. By Thomas Clark, M. D. Professor of Chemistry in Marischal College, Aberdeen. (*From the London and Edinburgh Philosophical Magazine, May* 1837.)—During the last three years, a salt, which, when melted, is clear and colourless, but when solid, opaquely white, and in general, not crystalline, has been observed to exude, in the liquid state, from cracks and other accidental outlets around the tweers of the hot-blast furnaces for making cast-iron in the Clyde Iron Works. The quantity of the salt varies according to circumstances not yet ascertained. At the Clyde Iron Works it has occasionally accumulated to such an extent as to require a wheel-barrow for its removal. Dr Clark has ascertained that a similar substance has been met with at other iron-works in Scotland, in which the hot-blast and coal were employed, but whether it occurs where coke is used for fuel he has not been able to learn.

The principal ingredient in the salt thus obtained is *cyanide of potassium*. In a hundred parts submitted to examination, 53 were this substance, and 47 carbonate of potassa, mixed with a small quantity of the carbonate of soda.

The product merits the attention of the pharmaceutical chemist, as affording a cheap and plentiful supply of the cyanide of potassium for the extemporaneous production of hydrocyanic acid.

On a new compound, named Antimoniuretted Hydrogen, and its resemblance to Arseniuretted Hydrogen. By L. Thompson, Esq. Member of the Royal College of Surgeons. (*From the London and Edinburgh Philosophical Magazine, May* 1837.)—The process recommended by Mr Thompson for procuring this gas in its greatest purity, consists in fusing together equal weights of antimony and zinc, and acting on the mass with diluted sulphuric acid. The plan is not altogether free from objections, but answers well enough for general processes. Thus prepared, antimoniuretted hydrogen is a colourless inflammable gas, exploding violently by the electric spark or a lighted taper, when mixed with an equal volume of oxygen, chlorine, or atmospheric air. Its odour is peculiar, and approaches nearly to that of arseniuretted hydrogen. Inflamed at a jet in the open air, it burns with a pale bluish-green flame, resembling that of arseniuretted hydrogen, and gives off a dense white volatile vapour, which collects as a semi-crystalline oxide, on cold bodies placed over it, affording another instance of the similarity of these gases. When a piece of cold glass or china is held in the flame, a metallic crust is deposited, and when a glass tube is used, the metallic film is formed in the part of the tube nearest the flame, and the white oxide around and above it. These appearances coincide in a very remarkable manner with those produced by arseniuretted hydrogen under similar circumstances, and though a practised eye may discern some difference between the crusts, that from antimony being more silvery and metallic, yet the line of demarcation is not easily drawn, for a thin film of antimony looks more like arsenic than antimony, and a thick crust of arsenic has the metallic appearance of antimony. When sulphuretted hydrogen is passed over the oxides of these metals, the antimonial oxide will become of a darker yellow than the arsenical: but this is also fallacious, for a small quantity of antimony gives a yellow colour not darker than that of orpiment; and if any metallic arsenic be present in the arsenical oxide, a portion of realgar forms, which gives the product an orange hue. The ammoniaco-sulphate of copper is liable to similar objections, for a large quantity of the oxide of antimony produces a whitish-green precipitate, which might easily be mistaken for Scheele's green. The two metals may, however, be distinguished, by adding a drop of nitric acid to the crusts, which will be immediately dissolved, and, on evaporation to dryness, leave a white powder. A few drops of a weak solution of the nitrate of silver being now added, and the whole exposed to the fumes arising from a stopper moistened with ammonia, the antimonial solution deposits a dense white precipitate, while the arsenical will produce the well-known canary-yellow flocculi. This mode of using silver as a test is preferable to the ammoniaco-nitrate of the same metal, as the slightest excess of ammonia destroys the colour, while by watching the effect of the vapour the exact quantity which is requisite is easily obtained.

We are requested by Mr William Brown to correct a statement made in p. 474, Vol. xlvii. regarding the period at which Mr James Russell, the late Professor of Clinical Surgery, began to receive the assistance of the ordinary surgeons in giving Clinical Lectures at the Royal Infirmary. It appears from the testimony of Mr Brown, that his father, then one of the ordinary surgeons, divided the duty of giving lectures on Clinical Surgery, at the Royal Infirmary, so early as 1801, and continued to do so for several years. This was previous to the period at which Mr Russell was appointed Professor, which took place in 1803. We have great pleasure in rectifying the statement, which, as given in last Number, does not affect the general force of the argument, further than in rendering it more conclusive.

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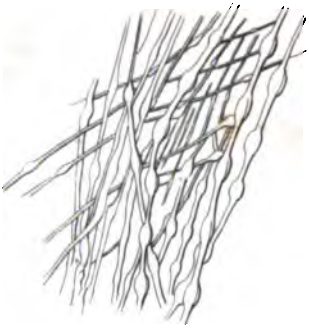

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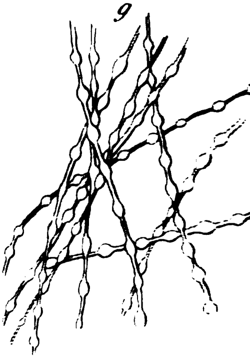

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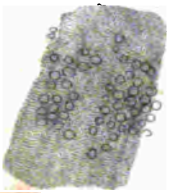

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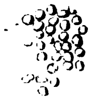

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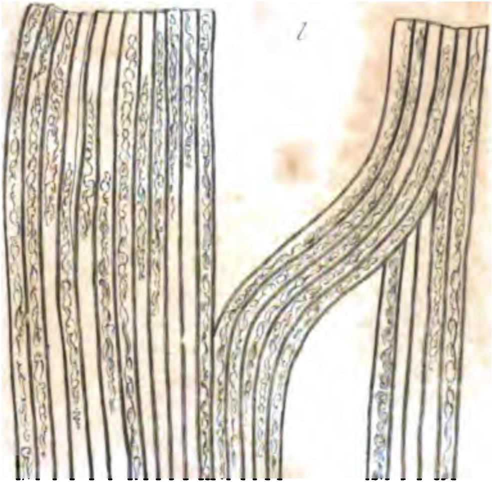

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THE
EDINBURGH
MEDICAL AND SURGICAL JOURNAL.
1. OCTOBER 1837.

PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*Observations on the structure hitherto unknown of the Nervous System in Man and Animals.* By Professor EHRENBERG. (Read to the Academy of Sciences at Berlin on the 24th October 1833.) Printed in February 1836. Translated, with Additions and Notes, by DAVID CRAIGIE, M.D., &c.

[THE microscopical discoveries of Professor Ehrenberg on the minute structure of the brain and nerves are so important both as anatomical facts, and as probable means of throwing light on the functions of the nervous system, that they deserve to be fully known to all medical readers who know that anatomy and physiology form the laws of all correct medical knowledge. Of the present memoir, which was first read to the Academy of Sciences at Berlin on the 29th April 1833, an abridgement was published the same year in the twenty-eighth volume of Poggendorff's Annalen der Physik; and from this the short notices already circulated in various countries have been derived. The author had soon after extended, repeated, and verified his observations; and in the meantime, while his results were in several points opposed by Professor Krause, they were confirmed by Müller, and modified, as we have shown in our last Number, by Joseph Berres, who is Professor not at Berlin, as is stated in the Medical Gazette, but at Vienna. The whole of the original memoir was only published in the Transactions of the Berlin Academy last year [1836;] and attached to it is an appendix, containing, with the information now given, several other facts in confirmation of the accuracy and truth of the observations of the author, and which has been rendered necessary, in consequence of the representations of Professor Krause.

The information contained in the memoir is too important to admit of abridgement; and the subject is so little understood, and requires for its correct understanding explicitness and perspicuity so much, that I think it best to publish the memoir nearly and essentially as it stands in the original. If it be thought that the literary history which forms the first part is unnecessarily minute, or might have been wholly spared, I may be permitted to suggest, that the alleged discoveries which daily experience shows arise from ignorance of the researches of previous inquirers, must be allowed, by every candid inquirer after exact knowledge, to prove the necessity of removing this barrier to its progress. It would be well if the example of Professor Ehrenberg were more generally imitated; and on the present subject it may be observed, that what he has thought necessary to write, is surely deserving of being perused. It is also not only interesting, but highly instructive to trace the resemblance between the few facts discovered by Leeuwenhoek, Della Torre, Prochaska, Fontana, and those established by the long and careful train of observations by Ehrenberg.

One omission in the history sketched by the present author, I have observed with some surprise. Professor Ehrenberg nowhere mentions the microscopical observations of Sir Everard Home and his able coadjutor, Mr Bauer; and as these observations have always appeared to me important,* and are valuable in several points in which they coincide with those of the present author, I have added a short sketch of their principal results. This task I once imagined I might have been spared by the short account which I gave, in 1828, of the minute structure of the brain, in my Elements of General and Pathological Anatomy; and I would still be satisfied by referring either to the original papers in the Philosophical Transactions, or to the work now mentioned. The former, however, is not very accessible; and the latter is now out of print. In this manner the reader will be in possession of all the most important information on the minute structure of the brain, spinal chord, and nerves.]

I. Section First.—*A short view of the knowledge hitherto obtained of the nervous substance, and of its relation to the organism.*

The brain and nerves, which form the organic sensitive system, or the substance of the nerves, have been, as the peculiar organs of intellectual energy, early and frequently the subject of deep thought and careful inquiry. On the one hand, the most acute conjectures upon the structure and function have been attempted to be made available; on the other hand, inquirers have laboured with unwearied zeal to unravel by the analytical method the constitution of this most mysterious of all organs. But the result of all the researches hitherto made forms a remarkable contrast between the highly complicated functions, and the remarkable simplicity of the organ. As we have succeeded in demonstrating in this the existence of a species of structure which has been in several respects entirely unknown, and which is evidently well founded, I think it peculiarly proper to submit to the Academy a communication thereon, so far as the subject has been hitherto investigated.

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* Elements of General and Pathological Anatomy. Edin. 1828. Chap. xiii. p. 369.

In order to communicate clear ideas on the knowledge and progress hitherto made, it is requisite to premise a short view of the previous essential inquiries and opinions. A very valuable history of the subject in its different departments is given from the more ancient period, in the fourth volume of Haller's *Elementa Physiologiæ Humanæ;* and in modern times Sprengel's and Hecker's History of Medicine, and the Biology of Treviranus, as also the special modern works on the Anatomy of the Brain, by Soemmering, Carus, Burdach and others, have given general approximations of the early and more recent knowledge.[*]

It is remarkable that the most modern notions upon the nature of the substance of the brain and nerves have reverted and approximated to those of the most ancient periods. Already, 500 years before the Christian era, and no historical record ascends to a higher antiquity than this period, did Pythagoras, to whom the existence of the nerves, as part of the body, was still unknown, maintain the opinion that the brain is the chief seat of the soul, and the seat of the intellect,[†] and forms at the same time the reproductive seminal matter,[‡] which he believed to be a sort of froth from the noblest parts of the blood. The soul was, according to him, a part of the æther.

However natural it might seem for every one to consider the head as the casement of the noblest organ, the Egyptians at that time held the brain in no estimation, since, as Herodotus shows, in the process of embalming the dead, it was extracted piecemeal through the nostrils, and was not treated with attention as the other organs, and, after being embalmed, replaced in the body. Similar ideas were at a later period formed among the Hippocratic physicians of Greece.[§]

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[*] [It may not be improper to mention, that Prochaska gives, at the commencement of his two treatises, *de Structura Nervorum*, and *de Functionibus systematis Nervosi*, the best account extant, both as to clearness and accuracy, of the doctrines entertained from the most ancient periods down to his own times.]

[†] Diogenes Laert. viii, 30.

[‡] Plutarch, Placit Philosopi, 5, 3, 4.

[§] Hippocrates de Glandulis, c. iv. ἐγκεφαλον ἰκελον αδενι.

These early practical anatomists and physicians recognized in the brain a body, which they described as cold, spongy, glandular, and mucous. Hence they formed the medical ideas that the brain serves to draw to itself the moisture of the economy, and the discharge in dysentery was regarded as an excretion from the brain by the spinal marrow. In the treatise of Hippocrates on Epilepsy, which is probably spurious, the brain is nevertheless so far recognized as the organ of the soul, that it is represented to draw to itself the vital air from the atmosphere.* Perfectly distinct traces of a knowledge of the true nerves before the time of Aristotle are found in the circumstance, that it is stated in the treatise *περι των σαρκων*, one of the doubtful writings of Hippocrates, that with the two veins, which go from the brain through the scull to both eyes, the most slender of the nerves issues from the tough cerebral matter,—thereby indicating the two optic nerves.[*]

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* Hippocrates, *περι της ἱερης νοσου.* *Αφωνος μεν ἐςιν ὁκοταν εξάιφνης το φλεγμα επικατελθον ες τας φλεβας αποκλεισει τον αερά, και μη παραδεχηται μητε ες τον εγκεφαλον μητε ες τας φλεβας τας κοιλας, μητε ες τας κοιλιας· αλλ' επιλαβη την ἀναπνοην, ὁταν γαρ επιλαβη ανθρωπος κατα το στομα κἀι τους μυκτηρας το πνευμα, πρωτον μεν ἐς τον ἐγκεφαλον ερχεται.—ὁ δε ες τας φλεβας αηρ ξυμβαλλεται ες τας κοιλιας εισιων και ες τον ἐγκεφαλον· και ὁυτω την φρονησιν και την κινησιν τοισι μελεσι παρεχει.*

[In this reference Professor Ehrenberg has not stated the sentiments of the Hippocratic school on the brain so clearly or pointedly as the text in the treatise warranted him to do. The author of the treatise on epilepsy says expressly, that the air which is received by the veins or air-vessels is conveyed into the cavities and the brain, and in this manner furnishes intelligence to the head, and motion to the limbs. I have inserted the whole passage that any reader may be satisfied. In the subsequent course of the same treatise, it is quite clear that the Hippocratic school believed the brain to be necessary to all the mental functions. To its healthy state the author ascribes the perception of pleasure, happiness, and mirth, and pain, grief, and distress. By the brain, he adds, we think and perceive, see and hear, and distinguish the base from the honourable, and bad from good. *και τουτῳ φρονουμεν μαλιστα και νοουμεν, και βλεπομεν, και ακουομεν· και γινωσκομεν τατε αισχρα και τα καλα, κἀι τα κακα και αγαθα, κἀι ἡδεα κἀι αηδεα. τα μεν νομῳ διακρινοντες. τα δε τῳ συμφεροντι αισθανομενοι.* And afterwards he adds, that disorder of the organ produces frightful dreams, panic terrors, and even mental derangement. In a subsequent passage he expresses a clear opinion that the brain, by the admission of vital air to the blood is the organ of sensation and intellect. *Κατα ταυτα νομιζω τον εγκεφαλον δυναμιν πλειστην εχειν εν τῳ ἀνθρωπῳ. ὁυτος γαρ ἡμιν εστι των απο του ηερος γινομενων ἑρμηνευς ἠν ὑγιαινων τυγχανῃ· την δε φρονησιν αυτῳ ὁ ἀηρ παρεχεται. ὁι δε οφθάλμοι και τα ουατα, και ἡ γλωσσα, και ἁι χειρες κἀι ὁι ποδες, ὁια αν ὁ ἐγκεφαλος γινωσκῃ τοιαυτα ὑπηρετουσι. γινεται γαρ παντι τῳ σωματι της φρονησιος ὡς ἀν μετεχῃ του ἠερος. ες δε την συνεσιν ὁ ἐγκεφαλος εστιν ὁ διαγγελων. ὁκοταν γάρ σπασῃ το πνευμα ὁ ἀνθρωπος ἐς ἑωυτον, ες τον εγκεφάλον πρωτον αφικνεεται και ὁυτως ἐς το λοιπον σωμα σκιδναται ὁ ἀηρ, καταλιπων εν τῳ εγκεφαλῳ εωυτου την ακμην, και ὁτι αν εῃ φρονιμον τε και γνωμην εχον.—διοτι φημι τον εγκεφαλον ειναι τον ἑρμενευοντα την συνησιν.*

It is indeed remarkable that it has escaped the notice of medical archaeologists, that this author has rectified several popular errors at that early period prevalent. He, immediately after the passage now quoted, states that it is quite unreasonable and erroneous to regard the diaphragm (*αι φρενες*) as the seat of thought, and throughout the whole treatise he repeatedly expresses his disapprobation of the term sacred or divine disease applied to epilepsy.]

Plato followed in his view of the brain the doctrine of Pythagoras; but, like a poetical philosopher, he embellished it with wonderful and fanciful appendages.[†] From small, triangular, incompressible smooth atoms the Divinity created the four elements,—fire, air, water, and earth. By mixing and regulating these last was composed the marrow (*μυελος*,) by which the different sorts of solids of organic bodies were connected. The marrow of all the bones he regards as a prolongation from the cerebral *medulla*, and the osseous tissue as the rough covering of the soul, which, for greater security, are further invested with a soft covering, viz. the flesh. The nobler part of the marrow, viz. the brain, [*το εγκεφαλον*,] whose capsule is the head [*κεφαλη*,] and in which the divine seed [*το θειον σπερμα*,] should be as in a repository, the Divinity has formed of a globular shape. The marrow receiving the other mortal intellectual power, God has created cylindrical and elongated [*στρογγυλα και προμηκη*.] The whole he named marrow, and he so framed the body, that the soul is attached to it at the same time with hooks, by which he understands the marrow of the bones of the extremities. With the proper nerves Plato was not acquainted; and he designates by the word *νευρα*, (*nervi*,) sinews and ligaments.

More definite and quite unequivocal knowledge of three nerves is found first in the writings of Aristotle, the most eminent of philosophers, and the knowledge of these was also the result of specific inquiry. [*] He describes very skilfully the three nerves of the eye of the fish as three canals of the brain,—a smaller one lying next the nose, the *nervus patheticus* of the upper optic hole, a middle one, which is connected and confounded with that of the other eye, viz. the proper optic nerve with the *Chiasma*, and the longest or largest [*μεγιστος*,] which is evidently the superior maxillary nerve lying in the inferior orbital hole, —the second branch of the fifth pair. In other respects, Aristotle was aware of the vagueness of the Platonic doctrine on the organism with regard to the nerves. He was convinced that the marrow of the bones in the extremities had no connection with the brain, and that the unciform character ascribed by Plato to the organ of the soul was a mere fanciful creation. But the idea, that the soul, if not fire itself, required nevertheless the influence of fire or warmth to rouse its energy in the economy, led him also to entertain some doubt on the nobler active functions of the cold, moist brain. He regarded the heart as the centre of life, and explained the relation of the brain, the importance of which in the economy was, according to him, self-evident, by the contrast which Nature herself made known. The heart and brain, indeed, were, in his estimation, the chief organs of the body ; but the proper seat of sensation and mental energy he believed to be in the heart as the centre of animal heat, from which canals proceeded to all the organs of sense. The brain he believed to possess a cooling property, and to exercise a moderating or tempering influence on the economy. The spinal marrow he held to be similar to the marrow of the other hollow bones, and entirely different from the brain, even opposite to that organ, in so far as it was hot while the brain was cold. Aristotle also distinguished by the term *νευρα* the sinews and ligaments, as Hippocrates and Plato had previously done.

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[*] Hippocrates, *περι των σαρκων* c. vi. *Απο του εγκεφαλου της μηνιγγος φλεβς καθηκει ες τον οφθαλμον δια του ὀστεου ἑκατερον. Δια ταυταιν ταιν φλεβοιν απο του εγκεφαλου διηθεεται το λεπτοτατον του κολλωδεστατου.*

[†] Plato. Timaeus Editio.Bekker. Londini, 1826. Vol. vii. p. 338. The views of Plato are given at the 48th, 49th, 50th, and 51st sections of this edition.

[‡] Aristot. Hist. Animalium. *Φερουσι δ' εκ του οφθαλμου τρεις πoροι εις τον εγκεφαλον. ο μεν μεγιστος και ο μεσος εις την παρεγκεφαλιδα, ὁ δε' ελαχιστος εις αυτον τον εγκεφαλον· ελαχιστος δ' εστιν ο προς τῳ μυκτῆρι μαλιστα. Οι μεν ουν μεγιστοι παραλληλους εισι και ου συμπιπτουσι (δηλον δε τουτο μαλιστα επι των ιχθυων· και γαρ εγγυτερον ὁυτοι του εγκεφαλου ἢ ὁι μεγαλοι, ὁι δ' ελαχιστοι πλειστον τε απηρτηνται αλληλων καὶ ου συμπιπτουσι.*

Though the existence of some nerves as productions of the brain was at that time unquestionably known, and though their important influence on the organism was also known, they were not, however, regarded as organs of sensation. According to the testimony of Galen, and Ruffus, the Ephesian,[*] the discovery of this remarkable property was first made by the ancient anatomist and physician of the Alexandrian school, Herophilus of Chalcedon, by means of experiment. He observed that certain *νευρα* communicated sensations, and others motions. Erasistratus, who flourished at the same period in Syria, established or made at the same time the same discovery. It is remarkable that Eudemus of Rhodes is mentioned among the discoverers; so that it appears that all those Greek physicians had derived their information from the same oriental source. Herophilus found that the sensitive *νευρα* always proceeded from the brain or spinal marrow, but the *νευρα* of motion went from the bones or muscles, and were again united to similar bones or muscles. He also believed, according to Galen's account, the posterior curvature of the upper ventricle to be the seat of sensation. According to the same author, indeed, Praxagoras, the instructor of Herophilus, must have known the final terminations of the arteries as the organs of sensation, but not for genuine nerves. The same Praxagoras had also represented the brain to be a useless appendage to the spinal marrow,[*] and consequently had no clear conception of its true function. That Erasistratus had distinguished the true nerves into nerves of sensation and nerves of motion is also ascertained, and he further taught that the nerves of sensation were hollow, and arose from the membranes of the brain, while the nerves of motion issued from the substance of the brain and *cerebellum.*

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[*] The passage of Ruffus, the Ephesian, who probably flourished towards the end of the first century after the birth of Christ, and wrote before Galen, is as follows. "Secundum Erasistratum quidem et Herophilum sensorii nervi sunt. Asclepiades autem ipsos sensu vacare testatus est. Cæterum secundum Erasistratum cum ge-

At that ancient period the poetical hypotheses of the philosophers were already abandoned, and some proportion of detailed knowledge of the nature of this new and important organic system was already developed by the physicians with considerable rapidity.

Galen had, in the second century after Jesus Christ, a very comprehensive knowledge of the brain.[†] He maintained with great certainty the brain to be the probable seat of the intellect, particularly for this reason, because it is a simple and likewise a more organic elementary body; and the nerves he represented to be the seat of the soul. He taught that the nerves issuing from the brain are soft and nerves of sensation, and those issuing from the *cerebellum* are firm and devoted to motion. The pairs of nerves proceeding from the brain and spinal marrow he describes accurately and circumstantially. He distinguishes in each cerebral nerve, though this is true only as to the optic nerves, three substances,—an internal medullary matter, a delicate investing membrane, and a thick external membrane. The action of the brain he believed to be an inspiration and expiration of the vital spirit. Fibrous structure he designated as a predominant character of the nerves, and the nervous fibres he regarded as hollow.

After the time of Galen, with whose death began the dark ages, anatomists had indeed occupied themselves eagerly, especially during the fruitful sixteenth century, with the investigation into many individual and yet unknown nerves, and

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mina nervorum (νευρων) natura sit, sensoriorum (αισθητικων) videlicet atque moventium (κινητικων,) sensorii qui cavi sunt, in cerebri membranis originem habent, moventes in cerebro ac cerebello. Dixit autem Herophilus aliquos esse voluntate obedientes nervos, qui a cerebro et a spinali medulla oriuntur, aliquos qui ab osse orientes in os inseruntur, aliquos in musculo in musculum transeuentes qui articulos etiam copulant.

[*] Galenus, ed. Kuhne, iii. 625, 671.

[†] Galenus, ed. Kuhne, Vol. xiv. p. 710. Εγκεφαλον εστι δε απλουν σωμα και δια τουτο αρχικον και κυριωτατον τῶν εν ὑμιν. Διο και το ἡγεμονικον της Ψυχης αυτῳ πιστευουσιν, ὡς Πλατων και Ιπποκρατης.

their connection with the brain and the different organs, and also with a more particular topographical description of the brain; but the opinions of the more accurate anatomists began to be divided upon the several views entertained on the nervous structure. Berenger of Carpi discovered in 1520 that the cerebellum furnished no nerves of motion, but even no nerves, and that all the cerebral nerves issue from the brain. Vesalius at the same time drew the distinction between the medullary and the cortical part of the brain. Volcher Koyter* observed in 1573, that the nerves consist of fibriform medullary fibres (*fibræ capillares*), in the brain from the *pia mater*, which, at their emergence from the cranial holes, are covered with the *dura mater*, and thought that the fibres of each nerve were originally invested in so many thick bundles, as in their course branches went off from it. No nerve consists of one individual filament. Fallopius contradicted in 1600 the statement, that all the nerves are covered by the *dura mater*, which is peculiar only to the optic nerves. Du Laurens of Montpellier ascertained at the same time that no cavity can be distinguished in the nerves, and that the division of the nerves into those of sensitive and motific is not applicable to the sixth pair, viz. the nerves of voice, which exercise both functions. The absence of manifest cavity in the nerves, Vesling also established in the year 1647, but still regarded the nerves as vessels and canals, which were filled with whitish medullary matter.

These and many other researches on the more correct knowledge of the substance of the brain and nerves continued in the state of uncertain opinions and conjectures, till the discovery of the microscope furnished inquirers with a new organ, as it were, by which they were enabled to penetrate more deeply into the nature of their structure.

Leeuwenhoek, whom zeal and keenness of apprehension entitle to the character of the founder of microscopical anatomy, was occupied most eagerly towards the close of the seventeenth century, with the investigation into the true structure of the substance of the nerves in their various forms. His observations, indeed, are not made with such circumspection that they could be employed as a basis for physiological deductions, because the requisite previous knowledge was wanting; but they do not deviate so far from truth as the predominant representations of the most modern times. What Ruysch had discovered by delicate injection of the cerebral vessels, Leeuwenhoek established by direct microscopical observation, namely, that the cortical matter of the brain consists only of blood-vessels.

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* Coster, Observat. Anatom. p. 107.

" Between the brains of large and small animals," says this accurate and laborious micrographer, " there is no other difference, unless that the large mass of the former is composed of a greater number of parts. And when I examine most carefully the vitreous or cortical substance of the brain, that appears to me in general to consist of no other parts than an incomprehensible multitude of minute vessels."

" Proceeding to the parts of the brain which are called medullary, I lighted there on some irregular globules of different sizes, almost equalling the globules of the blood, and which consisted mostly of thin translucent and oily matter. These globules seem to constitute the greatest part of the brain. They communicate the white colour, and appear to be interwoven by threads in the manner of net-work. Between each mesh of the net-work lay a body in the shape of a ball; and I regard the net as the vessels of the medullary matter, and the balls as globules. The remaining medullary parts consist of an infinite multitude of most minute globules, and a sort of a clear thin substance; and the last I conjectured had exuded from ruptured vessels, and also that certain vessels had coalesced into the aqueous matter."

" Upon advancing further, I detected in the cortical parts of the brain an immense number of very slender blood-vessels. Each of these almost I observed to open again into minute branches; and I observed besides a great multitude of globules, the size of which was one-sixth part of one globule of the blood. I fancied to myself the globules now mentioned, encountering vessels so small that passage through them was resisted, to be necessarily divided into other parts still smaller, and that such vessels were void of colour." *

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* Leeuwenhoek De Structura Cerebri epist. Deltae, 1684. Op. ii. p. 38. Inter cerebri grandium et parvorum animalium nullum intercedit aliud discrimen—nisi quod magnitudo illorum conflata est ex majori numero partium. Et cum accuratissime examino vitream (corticosam) substantiam cerebri, videtur illa mihi in universum constare ex nullis partibus aliis, quam ea incomprehensibili multitudine minimorum vasculorum.

Perductus ad cerebri partes quæ medullosæ audiunt, incidi ibi in quosdam irregulares globulos diversarum magnitudinum—(sanguinis globulum fere æquantes)—quique—maximam partem constabant ex tenui translucida et oleosa materia. Hi globuli—videntur maximam cerebri partem constituere. Caussantur colorem album—apparentque mihi per fila retis modo esse contexta.—Inter quodlibet foramen retis corporis—pilæ forma adjacebat. Reti comparo vasa medullosæ substantiæ—pilæ globulos.—Restantes medullosæ partes constabunt ex infinita multitudine minutissimorum globulorum et quadam clara ac tenui materia, quam ultimam conjiciebam ex ruptis vasculis manasse, necnon quædam vasa quoque in aqueam materiam confluxisse.—P. 34.

Ulterius progressus—deprehendi in corticosis partibus ingentem numerum tenuissimorum vasculorum sanguiferorum.—Videbam singula fere vascula iterum dehiscere in ramulos: præterea notabam magnam multitudinem globulorum, quorum magni-

From these passages, it appears that in the medullary substance of the brain, Leeuwenhoek further found, besides the vessels, also large oily globules of the size of the globules of the blood, which formed almost the whole of its substance, and of which he inferred that the colour was white, from their refracting the light. These globules or vesicles he saw connected as a net by means of threads, and in the meshes of the net the globules now mentioned. The rest of the medullary substance was further many very small globules, with a scanty transparent matter, which he regarded as exuded from the small vessels, as he also believed that some vessels terminated in it.

Leeuwenhoek further recognized in the cortical matter ramified blood-vessels, which were subdivided into vessels still more minute, and besides, globules one-sixth of the diameter of the globules of the blood, and he concluded that the blood-globules, when they arrived at a smaller branch of the vessel than their diameter, were divided. He recognized vessels which were still too narrow for the $\frac{1}{500}$th part of a blood-globule in the fowl, and the $\frac{1}{64}$th part of a blood-globule in the sheep, and calculated that if a grain of sand were divided into 64 million parts, still such a minutely divided atom would be too large for the finest vessels of the brain.

These earliest observations of Leeuwenhoek were made on recent brains, and are in many circumstances in unison with the observations which I propose to communicate. Upon the direct connection, nevertheless, observed by him between the ramified canals conveying red blood, and the colourless and unramified canals of the brain, Leeuwenhoek has been very much deceived, and by obscure and erroneous theories upon the blood and the mode of ramification of the blood-vessels, he has been led into a wrong route, in which he has continued to wander more remotely from the true exposition of the structure of this substance.

Thirty years after, viz. in 1717, when an old man, as he says himself, Leeuwenhoek repeated these researches on the substance of the brain.[*] But his communications at this period are less valuable. His observations also were made not on the recent brain, but on the dried substance and thin slices of dried cerebral matter. According to these, quite unnatural and distorted phenomena of his designs are given by a painter. What he

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tudo erat $\frac{1}{6}$ pars unius globuli sanguinis.—Imaginabar mihi modo memoratos globulos vasculis tam angustis, ut transitus iis negitur, occurrentes, in alias minores partes dividi necesse habere et talia vascula colore carere, &c.—P. 34 and 35.

[*] Leeuwenhoek says, "Ita ut mihi jam imaginer nervum hunc opticum copiam vasorum globulis completorum in se continere." Opera iv. p. 103.

took for blood-vessels may as well be mere folds, ridges, and furrows, which had been formed by the coagulation of the cerebral substance.—*Op. I. Epistolæ Physiolog.* p. 309. *et seq.*

Leeuwenhoek was, however, more fortunate with the microscopical examination of some of the individual nerves than with that of the cerebral substance. Already had he in 1674 described the structure of the optic nerve in the eye of the ox. He found no optic canal in its centre, but saw that it consisted of a fibrous vascular substance. These fibrous vessels he saw filled with slowly moving globules. In the optic nerve of the horse he found the same transparent large globules which the brain presents in the vicinity of the spinal marrow. He first mentions, in the year 1715, that he had observed some days previously, that the muscular nerves in animals are composed of 4—20 threads. Though not only individual nervous threads are hollow, but all are provided with many cavities, still it may be proper, he admits, to repeat these observations. He does not well perceive how so much fluid as the nerves are wont to furnish can be propelled through them. In the year 1717, he mentions that he had observed directly the cavities of the nerves in a cow, but he could show them to no one, as they at once dried. There might be about 100 vessels which formed a single nerve, and although their cavities were very small, he had seen still smaller living animals in water, [not in the canals themselves,] which easily moved therein; (the figure of the transverse section which he gives is ideal.) A regular motion of fluid or circulation is not manifest in the nerves. In the nervous threads he saw sometimes also blood-vessels,—veins and arteries (?), the most delicate of which no longer conveyed blood. The spinal marrow he found in various points agreeing with the nerves in structure, but always very confused. In the nerves of a lion, like a hair in thickness, he calculated the number of canals at 1000. Since the time of Leeuwenhoek, the observations of Della Torre, Monro, and Fontana attracted to the structure of the nervous substance particular attention, which was so much the greater, as these observations were more laboriously, more circumstantially, and evidently more carefully performed. But unfortunately, all the three observers, as they examined with similar apparatus quite the same substances, and yet announced quite opposite and completely irreconcilable results, essentially obstructed the progress of this species of knowledge.

The observations of Della Torre by the microscope, which consisted of small self-formed glass-globules, and embraced a very narrow field, propagated the erroneous representation that the brain is a pulpy mass, which consists of granules mutually united in rows, floating in a tough transparent fluid. These granules vary in size in the different parts of the brain and nerves. The establishment of this view was long powerfully aided by the confirmation afforded by the intelligent Prochaska, who only differed in this respect, that he represented the nervous globules as of the same size everywhere. This representation was otherwise very favourable to the philosophical ideas afterwards propagated, in which the great object of search was one material simple fundamental substance, of which the organic substances might be composed; and exactly in this central point of the organ of the soul did that simple substance most closely connected with the mind agree with the ancient Platonic principles. It was recognized as such in the embryo, and in the lower animals it was believed to be the only simple substance met with. To these views recent observations have furnished insurmountable obstacles.

With equal detriment did the observations of Monro operate, who taught that he had seen in the brain by the microscope, by transmitted light, serpentine, twisted, solid fibres, which composed the whole substance not only of the brain but of all the other parts of the body. The observations were quite correct; but instead of inferring from them that the solar light when it passes through any delicate tissue, always occasions the appearance of contorted fibres, he rather concluded, from want of dexterity in the art of observing with the microscope, that the nervous matter, with which he accidentally began his observations, is the individual fundamental element of all organs, viz. skin, nails, hair, plants, and even the metals, earths, and salts. He subsequently discovered his mistake, and regarded the phenomena as the result of optical illusion. (A. Monro, Observations on the Structure of the Nervous System.)

Much more circumspect, though not more fruitful in results, were the observations of Fontana, which were first published in his work on the Poison of the Viper. Felix Fontana, the meritorious naturalist, and Director of the Natural History Museum in Florence, was in England in 1779, at the time at which the celebrated Alexander Monro explained orally and taught publicly his views and observations, and requested of Dr Monro, in writing, a more circumstantial statement of his important discovery, as he himself had the idea of making known certain results of his own. But he received no answer. Forthwith this conduct accelerated the publication of Fontana's observations, of which the chief results were the following.

First he demonstrated that the banded external appearance is a general character of all nerves, and a phenomenon produced only by the undulatory disposition of the parallel fibres of the nervous investment or neurilema. In the interior of the nerves he saw the matter consist of parallel threads, which he denominates Primitive Nervous Fibres, (*Cylindres Nerveux Primitifs.*) The parallel fibres of the superficial layer which serve for the covering of the nervous fibres he names tortuous cylinders, or spiral fibres, and ascribes to them a thickness of $\frac{1}{13000}$ part of an inch, or about the $\frac{1}{1000}$ part of a line, p. 206. In the rabbit he discovered quite distinctly that the primitive fibres of the nerves were delicate cylinders, which appeared to be formed of a thin membrane, and partly to be filled with a transparent yellowish fluid, and small globules or dissimilar corpuscles. His figure, nevertheless, corresponds so little with the clearness of his language, that the observation may itself not have been clear. Farther, by subsequent researches, as he at the same time mentions, upon these observations, he had again become doubtful, and although he very distinctly and accurately describes the nervous fibres as small tubes with contents, yet the final description of the same is again incorrect, in so far as he states that each individual primary canal of the nerves is enveloped in a sheath by numberless spiral fibres. Lastly, when we inspect the figures to distinguish in them solid cylinders, no trace of a cavity and medullary matter is observed.

The medullary matter of the brain consists, according to Fontana, of a vascular substance, which lies in convolutions like the intestines, and is surrounded by globules; and in this bowel-looking substance there appear several round or obtuse-looking *corpuscula.* Some portions of the bowel-like substance, he says, particularly the thicker portions, appear ramified, others seem to terminate in round bodies. In every case he had ascertained that the medullary substance consists not simply of blood-vessels, and also that it is not composed of mere globules, but that it is a substance formed of intestine-like, incurvated canals.

The same structure, though still more delicate, he distinguished in the cortical matter of the brain, and surrounded with still more globules also in the retina of the rabbit. All these intestine-like tubes described by Fontana are evidently the elastic, contracted, articulated canals of which I am afterwards to speak.

The magnifying powers employed by Fontana were very great. He employed a magnifying power, which increased the object from 700 to 800 diameters. If his eighth figure, which magnifies the object 800 times, and is represented 6 lines thick, is rightly taken, the primitive fibres of the nerves, as observed by him, must have been $\frac{1}{133}$ part of a line thick, which corresponds with the fact very well.

Though the observations of Fontana were, generally speaking, correct, yet, as none of the four substances examined by him were known in their true shape, this prevented other philosophers from taking the same view, and these laborious researches were not received, and the discordant results of the observers already named had thrown suspicion on the use of the microscope, and had contributed to the discovery of a fact now first known, but which should long before have been known and applied to practice, as it was now a century since mankind were in possession of the powers of the microscope.

G. V. Cuvier, Soemmering, Gall and Spurzheim, Reil, Treviranus, Meckel, Tiedemann, Carus, Burdach, Mascagni, and many other celebrated men, had indeed evinced a sufficiently lively interest in the study of the minute structure of the brain; but Treviranus declared that he never took up without apprehension that instrument which had already imposed upon so many observers. In this distrust of their own powers by these meritorious observers, it may be important to know, that after a long-continued use of this important instrument, which alone can bring us to a system of physiological knowledge of the human body, in some degree satisfactory, only now for the first have I been able to arrive, through trials cautiously pursued with increasing confidence, at an entirely new representation of these subjects.

The most recent period, instead of contemplating methodically on a solid basis the organic processes of the mental energy, continues to advocate two contrary opinions upon the cerebral structure, both of which are nevertheless erroneous. Barba, and with him many distinguished modern observers, continue to sanction anew the view given by Della Torre and Prochaska of granules in a viscid fluid; while, on the other hand, equally celebrated and meritorious inquirers maintain, that they have recognized no granules, but merely fibres, as the fundamental substance even to the cortical part of the brain. Some others hesitate between the two opinions. Here then we find in general established in physiological writings, among the simplest organic parts of the body, either cerebral globules, or cerebral fibres, or a cerebral tissue or web. Those who maintain the fibrous structure have been contented mostly with examining the substance of the brain after induration by spirit of wine and similar agents. Others have contemplated the radiating and streaked fibres here and there visible by the naked eye, and feeble magnifying glasses; and, disregarding the idea of Plattner and Soemmering, that the nerves consist only of solid threads, which are surrounded and filled with vital fluid by the arteries, exactly as a silk cord is rendered electrical, anatomists have agreed much in this, that the cerebral substance which forms the internal part of the brain, is enveloped in the nerves by membranous cylindrical canals, and that further, the contents of the cylindrical canals is connected with, and is one and the same with the brain. In consequence of these recent results of the researches of Treviranus, the whole brain ought to consist of nervous medullary matter.

[The most recent microscopical observations on the minute structure of the brain and nerves are those by Mr Bauer, and of which Sir Everard Home has given a sufficiently minute account in two Croonian lectures,—one read to the Royal Society on the 7th December 1820, and published in the Philosophical Transactions for 1821, the other read to the same body on the 20th November 1823, and published in the Transactions for 1824.

The first object in the nervous system submitted by Mr Bauer to the field of his powerful microscopes was the optic nerve and retina, the latter principally because it it was regarded by Sir Everard Home as "the only expansion," that is, the only expanded form "of medullary substance in the body." Mr Bauer found the optic nerve to consist of many bundles of extremely delicate fibres connected together by means of a jelly-like, transparent, semifluid, viscid substance, easily soluble in water. The dimensions of the globules measured by the micrometer are from $\frac{1}{2800}$ to $\frac{1}{4000}$ parts of an inch, with a few of $\frac{1}{2000}$, the latter being the size of the red globules of the blood deprived of their colouring matter.

The retina appeared like a continuation of the bundles composing the optic nerve, consisting entirely of the same-sized globules connected into fibrous lines, and forming bundles which radiate from the end of the nerve towards the circumference where they almost disappear, and terminate in smooth membrane.

Besides the jelly-like substance connecting the component globules, Mr Bauer found the whole retina interwoven with innumerable blood-vessels, both arteries and veins; and when the membrane and part of the nerve was soaked in water for three or four days, the soluble jelly-like matter disappeared, leaving the globules and the blood-vessels, which, when separated, formed a delicate net-work by the free mutual anastomosis of their branches.

This jelly-like, viscid, colourless, transparent matter, which Mr Bauer found in the optic nerve and retina, he also recognized in the brain and nerves in general, in which it also forms the means of connection of the globules, or a sort of basis to the organization of the nervous system. Its colourless transparency renders it invisible, while the substance of the brain is recent, or if it be immersed in water; but if the water evaporate and the substance becomes dry, the jelly-like matter collects round the globules and fibres in considerable quantity, or forms irregular flakes of various sizes in the glass, to which it adheres firmly. It is said to be highly elastic, and it is coagulated, and becomes opaque on immersion of a portion of brain in alcohol,—a circumstance from which it may be inferred that it is albuminous in chemical constitution.

If a portion of brain is cut off quite fresh, and before being put in water laid on a dry glass plate covered by another hollow plate to prevent evaporation, there exudes a colourless aqueous fluid, which evaporates on exposure to air, leaving hardly any stain on the glass. This seems to be merely the watery part of the albuminous connecting jelly.

Mr Bauer found by placing thin slices of the medullary part of the brain on a glass plate previously moistened with water, and allowing water to run over it when held obliquely, that the medullary matter became broken, and there were brought into view innumerable loose globules, many fragments of fibres consisting of single rows of globules, and bundles of fibres, in some instances of considerable length. The globules now mentioned, which are according to the figures perfectly spherical, vary from $\frac{1}{2400}$ to $\frac{1}{4000}$ part of an inch in diameter, but the predominant size is $\frac{1}{3200}$ part of an inch. They are semitransparent, of a white colour, arranged in rows so as to form long threads or fibres, which are aggregated into bundles. They are held together by the elastic transparent albuminous jelly.

In the gray or cortical matter of the brain, besides the two constituents now mentioned, Mr Bauer found a fluid resembling the serum of the blood, of a yellower tint than the fluids in the medullary substance or any other part of the brain, and when dried assuming the glassy appearance, and cracking as serum does when dried on glass. From these facts it may be inferred that this is also an albuminous fluid, but containing a fawn or buff-coloured colouring matter.

The parts now mentioned, 1. elastic transparent viscid jelly, 2. globules, and 3. aqueous albuminous fluid, colourless, or of a fawn-coloured tint, are with blood-vessels the essential or fundamental constituents of cerebral and nervous matter; and the chief differences presented by the different divisions of the nervous system depend on the different proportions in which these constituents are combined in each.

Thus the cortical or gray-coloured substance of the brain and *cerebellum*, that is, the convoluted matter of the former, and the laminated or foliated of the latter, consists chiefly of globules from $\frac{1}{3200}$ to $\frac{1}{4000}$ part of an inch in diameter, the smaller globules being most numerous, of a large proportion of the jelly-like elastic viscid substance, and the yellow or tawny-coloured albuminous fluid, while the blood-vessels are small but numerous. In the white cerebral matter, on the contrary, the large globules from $\frac{1}{2000}$ to $\frac{1}{2800}$ of an inch predominate; the connecting jelly is more tenacious but less abundant in proportion to the globules; and the latter are more distinctly arranged in rows, so as to constitute fibres and form a fibrous-looking structure; while the arterial and venous branches are larger than in the cortical or gray matter.

The mesolobe or *corpus callosum* contains the greatest proportion of the large globules, ($\frac{1}{2400}$ of an inch,) and the viscid jelly is said to be at least equal to the globules in quantity. In the *crura cerebri* and peduncles of the *cerebellum* the jelly is said to be in greater proportion than the globules, and the fluid part generally is more abundant. The annular protuberance (*Pons Varolii*) is composed chiefly of globules of the average size $\frac{1}{3200}$, with abundant viscid matter, and with the fibriform arrangement less distinct than in the *medulla oblongata.* In the restiform processes, the pyramidal bodies and the olivary eminences which form the part so denominated, the fibrous structure consists chiefly of the large globules, ($\frac{1}{2000}$ to $\frac{1}{2800}$ of an inch) with abundant viscid jelly, which is rapidly soluble in water.

In the spinal chord itself *(medulla spinalis,)* Mr Bauer found the globules of from $\frac{1}{2400}$ to $\frac{1}{3200}$ of an inch predominate, and the jelly-like basis and fluid to be less tenacious, but more copious than in any other part of the brain. To this circumstance Sir Everard Home ascribes the difficulty of discovering the globular structure in the spinal marrow; for if the part be not sufficiently soaked in water, the fibres cannot be separated; and if macerated too much, the whole is dissolved in a mass like cream.

When the brain by immersion in alcohol is hardened, the elastic viscid jelly is coagulated, and rendered opaque, and the appearance of globules is no longer perceptible.

Whatever may be the ultimate fate of these observations, having been made by an observer, both skilful, expert, and of great resources, they deserve assuredly to be more generally known to physiologists than the memoir of Professor Ehrenberg would allow us to believe they are. They do not accord in all their details with the results obtained by Professor Ehrenberg. But they approach to them in two circumstances, *first,* in the general fact of a globuliform or bead-like arrangement in the cerebral and nervous fibres, and *secondly,* in assigning to the globules a size varying from $\frac{1}{2000}$ to $\frac{1}{3000}$ part of an inch. The existence of the interior cavity is the chief point of difference; and that, so far as the description of Mr Bauer goes, is rather a negative than a positive circumstance.

II. Section Second.—*Observations on the articulated tubular structure of the brain and spinal marrow of man and animals, and on the absence of nervous medullary matter in both.*

Certain of the observations here communicated I have already made for a series of years. But as the results were very different from the views hitherto taught, and a clear connected account of the tubular cerebral structure had not been given, I refrained from publishing them, that I might not, by precipitate and confused statements, impair the confidence in the aid of the microscope. Recently, however, as the philosophical views of very meritorious persons, who still recognise in the brain a primary animal substance, in connection with my own desires to trace the boundaries of the organization in the bodies of Mammalia and Man, have recalled me to the study of this subject, and led me to investigate at the same time the structure of the whole elementary tissues of the body, I have thought it preferable to confine my present attention to a full and minute account of the most important of these tissues, though I have collected upon several of the other subjects various interesting experiments.

a. View of the mode of procedure.

The results now submitted are not derived from one or a few observations, but embrace nearly the whole range of the nervous system, both as a direct inquiry into the structure of many individual parts of one and the same nervous system,—and as an analogical comparison of the same structure in the different classes and orders of organic bodies. The materials from which the conclusions were drawn were the following.

1. In the human subject 21 representations of the nervous matter from of an equal number of different places.

2. Of twelve different mammiferous animals 84 representations, namely, from the dog, horse, hare, rabbit, mole, hog, sheep, roe, bat, calf, porpoise, and squirrel.

3. Of seven kinds of birds 39 representations, namely, the common fowl, the crow, the goose, the pigeon, the little bittern, the kite, and the starling.

4. Of four kinds of amphibious animals 17 representations, namely, the gray frog, the green frog, the water-newt, and the adder.

5. From eleven fishes 43 representations, namely, from the torsk *(Gadus Callarias,)* the viviparous blenny, the *Gobius niger*, the herring, the *Labrus lineatus*, the stickleback *(Gasterosteus pungitius)*,—all from the North Sea; further, from the pike, *(Esox Lucius,)* the eel, the karausch, the river perch, and the red-eyed carp *(Cyprinus erythrophthalmus.)*

6. From the class of crustaceous animals 14 figures, viz. from the river-crab, the lobster, and the crab of the Baltic.

7. From the *Mollusca* class 5 figures, viz. the red-necked garden snail, and the marsh snail.

8. From the insect tribe 3 figures, from the rhinoceros-beetle; and

9. Among the annulose animals 12 figures from the leech.

The whole of the figures were made immediately after the animals were dead, and while they were still quite fresh; and in those from the human body I have examined the parts as little changed as possible in frosty weather during winter.

With regard to the further and particular method of examination, the following information is requisite:

I possessed in 1833 a microscope manufactured by Chevalier of Paris, and augmented in power at the establishment of Pistor and Schiek of Berlin,—which, indeed, did not furnish the greatest attainable magnifying power, but equalled the magnifying power of that used by Fontana. I had also frequent opportunities of comparing the greatest attainable magnifying powers, and have employed the same to the extent of about 3000 diameters. The greatest magnifying powers, however, and all great magnifying powers, I have never employed, for the purpose of tracing the figures. All the present observations I have preferred making, by magnifying powers from 350 to 360 diameters, a degree of enlargement which approaches that which Treviranus had already employed in 1816. (Trev. p. 131.) My reason for excluding the more highly magnifying powers is the inferior degree of clearness and definiteness of the inner figure in the same. These, however, I have frequently employed as means of testing the accuracy of the observations.

For making sections of the brain, I employ a two-edged, very flat, broad, sharp knife, and draw it in making the motion of cutting. In this manner are formed the thinnest slices, particularly of quite recent brains. The thinnest slices thus cut off I thrust with the needle or the point of the knife on a glass-plate, and cut off perpendicularly that part of its finest edge which was least changed. Should this fail in the first incision, I patiently repeat the attempt till it succeeds. This most delicate edge of the thinnest slice of brain I examine immediately with the microscope, without water and without pressure; and then place on it a very thin small glass-plate, from four to five lines broad, and one-third of a line thick, or a plate of mica, in order to expand the parts somewhat without serious change in pressure, and to bring them to the same level. For this purpose, after trying and comparing the effect of both, I find mica less suitable than glass. I then urge the glass-plate with slight but increasing pressure, and compare the operation of the process. Manifold experience has taught me that the tenacious cerebral matter adheres firmly to the glass in its finest parts, and that on slight pressure the parts in immediate contact with the glass are not detached on being impelled forwards, but the middle are displaced between the touching objects, which effects a most important disturbing change in the natural arrangement of fibrous parts, as impulsive pressure by two glutinous plates brings the parallel threads of a twine-or yarn-like texture into opposite crossing, and converts them into a tissue, which furnishes a very different appearance from the original condition, and leads to erroneous results. I have therefore also surrounded the section of brain with water, and remarked that this not only does not derange the observation, but that it allows us to distinguish the object more clearly, and in a more natural position of the parts, since the water does not sensibly dissolve the nervous substance. The same result ensued with albumen, the water of the anterior chamber of the eye, and serum. The pressure of the medullary slices sometimes thick, sometimes the most slender practicable, I have increased even to laceration; and at the spots so burst, where all the constituent parts are wont to lie quite separately, and at the edges, with and without water, shortly before bursting, generally the most distinct views of all were obtained. But it is easy to make the pressure too great, and this crushes the organic structure. Wherever irregular globules and granules are seen, the organic constitution has been destroyed by excessive pressure; and hence it happened that Leeuwenhoek, and Fontana, and Allen, observed granules and globules. The gentlest shoving of the glass-plates on each other by very slight pressure is very particularly destructive. To obviate this inconvenience, I had already, in the year 1831, proposed an apparatus for applying pressure without the shoving movement, which at my request was constructed by Messrs Pistor and Schiek, and which I mention in my second contribution on the structure of the infusory animals. *

In the examination of thick nervous chords, as the muscular

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* This apparatus was subsequently, in 1833, added to the Berlin microscopes. It consists of a small round brass-box, which may be screwed on and unscrewed. In the lower part lies a thick piece of ground glass, which fits with a notch in one of the edges of a prominent brass pin. On the glass is laid a piece of very thin ground glass, which in like manner rests with a notch on the same pin, and projects with its thickness over the edge of the lower capsule part. When a slender object is placed between the two glasses, and the upper part of the capsule is unscrewed, it presses together with its edge the two glasses simultaneously, with a screwing force easily regulated at will, and without admitting of the glasses gliding on each other. Somewhat larger is the very similar microscopical press contrived by Purkinje and Valentin in the year 1834. The best apparatus of this kind known to me is one lately manufactured by Pistor and Schiek. This admits of being increased and diminished during the time of making the observation with two fingers of one hand, an improvement which insures great advantage, and enables us to render the microscope perfect by the more secure method of fixing its parts.

nerves, &c., I have always previously prepared the recent nerve by dissecting it clean, and with the scissors cut off a portion from both ends without tearing. This portion I next divide in the long direction with perpendicular pressure, without tearing, either by the sharp knife or with scissors, in order to meet the neurilema more easily, and then separate the parts from each other by means of two fine steel needles, avoiding, with the greatest possible caution, all laceration, and treat them without water. Similar preparations I have placed with a glass spatula, and treated with progressively increased pressure. The same I have then examined under water, and I have never found that the water had effected the slightest change on the structure; but I beheld all more clearly in a more isolated manner with the water, and, on the other hand, without, every thing lying together partly adhering and distorted.

To recognize in a satisfactory manner the nervous medulla in the nervous *tubuli*, and the shape of the *tubuli*, it is necessary to expand the *tubuli* by a little pressure, till the mass of tubules to be examined meet in the simplest possible order. It would be pedantic, if it be wished to understand the parallel manifest disposition of all the nervous *tubuli*, to expect that they should observe the mathematical parallel. They run under and athwart each other; and the fibres which at one moment are parallel, are, by the action of the muscles and the neurilema, not so the next moment, and alternate the ensuing instant. The pressure of a lint chord is the most parallel of all to bring into net-like crossings the threads when they are not stretched. Hence we see much more frequently by the pressure slightly crossing them perfectly parallel nervous tubes, though the knowledge of the circumstances leaves no doubt, that we may and must speak of parallelism of the fibres.

To examine the spinal marrow sufficiently I broke off the osseous canal, and within the canal I cut off at once by scissors, without laceration, the portions for examination; or, in the more delicate animals, as young frogs, &c., I treated the spinal marrow as a muscular nerve.

[It may perhaps facilitate the understanding of the following description, if it be mentioned that Professor Ehrenberg describes, as discovered by him, the following forms of organic structure in the brain or its parts, the spinal chord or nerves.

1. A set of tubes which present at definite intervals globular or spheroidal expansions, so as to resemble a string of beads, which do not touch each other, but have a short communicating space interposed between each bead. To these tubes he has given the name of varicose, from their resemblance to the *varices* of a vein,—and jointed or articulated tubes, because of the slight

resemblance to a set of joints. These tubes, which present to the microscope the appearance of parallel fibres, he shows by various proofs to have an internal cavity, and to contain a peculiar matter, to which he assigns the name and qualities of nervous fluid. They are confined chiefly to the white matter of the brain.

2. A set of tubes, straight and uniform, without the alternate spheroidal enlargements, also hollow, and to which he applies the name of simple cylindrical tubes. These are found chiefly in the nervous trunks and chords. These are generally larger and coarser than the articulated tubes; but in certain points the latter are found to pass into the former, by gradually losing their bead-like enlargements. These tubes he represents to be distinguished from the cerebral jointed tubes, by containing in their interior a viscid, white, but less transparent matter, to which he applies the name of Medullary.

3. A substance consisting partly of very minute fine grains, with some coarser grained matter, disseminated, as is said in the language of mineralogy, through the fine-grained matter. The latter is entirely confined to the gray matter of the convoluted surface of the brain, or the laminated surface of the cerebellum.]

b. Structure of the Brain.

α. The Cortical Matter.

The substance of the brain has been distinguished into a reddish external cortical matter, already known by the physicians of the middle ages,—and a white medullary matter placed internally. The substance of the circumference, or the convoluted part of the brain, or the cortical matter, consists of a thick, very delicate vascular net-work, often conveying numerous blood globules, as Ruysch first observed, but which at its surface is covered with a vascular net-work, with serpentine tendinous fibres. Besides the thick and delicate vascular net of the first substance, I saw in the same, next its outmost edge, and in its most remote circumference, a very fine-grained soft substance, in which here and there are deposited larger grains, nestled and imbedded, as is the case for instance in the capsule of the thymus gland. The large grains are free, and consist of small granules, which appear to be connected in rows by means of slender threads to the very fine small grains of the substance, singly, and wherever their small size, softness, and transparency allows the observer to be convinced of this disposition. In the neighbourhood of the medullary substance the fibrous character of the cortical matter always appears more distinctly, and in the same substance the blood-vessels are something larger and less numerous.

I have recently taken much pains to trace the final terminations of the cortical vessels, and ascertained only so much that they become invisible in a thick vascular net-work. Anastomotic unions I have not been able to discover, though I have employed the most perfect means of modern times. But I have ever intuitively observed a direct relation of the same apparently sheathless, detached granulated blood-grains (not blood globules) to the nervous matter. If the smallest ends of the articulated tubes have open mouths, to these, accordingly, were the smallest granules of the blood-grains fitted for the purpose of receiving them directly, and serving for the distillation or preparation of the nervous substance. By what means the blood-grains escape from the vessels is still uncertain; but to find a reason against their exit in the circumstance of no opening being visible, appears to me not to be a more weighty objection, than that all organic pores should open and shut periodically, according to necessity. It is easy to mistake the anastomoses of the vascular system for those of the cerebral tubes.

β. The Medullary Matter.

The white or medullary matter of the brain shows still more distinctly the arrangement of fibres, which pass in the form of direct and enlarging continuations of the more delicate cortical fibres, which especially are directed from certain eminences, that is, the linear or band-like origins of the convoluted surface of the brain, which chiefly lie in the long direction of the convolutions,—in a radiated manner toward the basis. These are not simple cylindrical fibres, but rather resemble, according to numerous careful observations by me, hollow strings of pearls, the pearls of which are not in contact, but are united by a canal for a small interval, or they resemble exactly tubes or canals dilated at intervals into minute bladders. These bladders or *ampullulae* of the tubes were known to Leeuwenhoek, who regarded them as globules of fat, which constituted the greatest part of the brain. The connecting canals also he has obscurely indicated. These tubes, uniformly straight, which appear, only in consequence of the matter being crushed, and the subsequent removal of the pressure, to be convoluted like the intestines and variously incurvated, as Fontana saw, are generally parallel in direction, sometimes crossing each other. I have four times recognized, in almost numberless individual experiments, a ramification in such individual canals; but anastomosis I have never observed. In the neighbourhood of the base of the brain there are always found between these bundles of nodulated tubes, individual tubes much thicker than the rest, as is also the case in the surrounding matter of the ventricles. In these thicker tubes it is often possible to recognize distinctly an external and internal boundary of their wall, or they present, besides their two external boundary lines, other two inner ones, which enable us easily to distinguish the width of the area of the internal cavity of the canals. Hence these nodulated linear parts of the brain can no longer be named either fibres or threads; but they are ALTERNATELY ENLARGED, THAT IS, VARICOSE ARTICULATED TUBES OR CANALS. All doubt upon this arrangement and structure is removed by the direct transition of the cylindrical tubes of the muscular nerves into these articulated tubes.

γ. Particular structure of the articulated cerebral tubes, their contents and radiation.

The interior of the varicose or articulated cerebral tubes is everywhere perfectly diaphanous, so that they must be regarded as conveying only vapour, water, or clear jelly. The milk-white colour which they present to the naked eye is favourable, therefore, to the idea that something is contained in the canals; but the walls present not only a milk-white colour but a slight degree of turbidity, while this colour is wanting in the cortical substance, into which the same walls extend. I have, nevertheless, not been able, though with a 3000 power of linear magnifying to distinguish the agent causing the turbidity, as something granular or peculiar; and with the greatest magnifying power I oftener saw no turbidity.* As the colourless or transparent articulated fibres of the cortical substance evidently constitute the tips or apices of the fibres of the medullary matter, and consequently have *parietes* entirely similar, yet may have a small internal cavity and scanty contents,—it appears to be a just conclusion, that the white colour is inherent, not in the *parietes* of the tubes, but in their contents. Tearing individual cerebral tubes, especially the larger, is followed by elastic contraction of their free ends, which causes chiefly at the nodulated ends the irregular intestinal-looking aspect, which has imposed on many observers. Though no discharge is perceptible, this does not afford proof against the existence of an internal fluid. If a leech, especially a young one, be cut in two pieces, both cut surfaces contract at once so forcibly, that in general not a drop of fluid escapes, although there be enough in the body and the cut surfaces are rounded by it. Like phenomena of contraction are by no means unusual with practised comparative anatomists. It is also difficult to recognize a discharge, if the fluid be tough and transparent, as this appears to be in the interior of the tubes. It is also certain that these tubes do not contain air, because in pressure under water no air-bells escape from their extremities; and as the calibre of the inner cavities is seen in the thicker tubes, the substance which distends them, being very transparent and tough, is difficult to be distinguished. If that medullary substance, which is distinctly perceptible in the cylindrical tubules of the muscular nerves, be denominated nervous *medulla*, no trace of such matter is to be recognized in the articulated tubes of the brain, and only very rarely can a doubtful trace of it be observed in the thicker articulated tubes of the spinal marrow, arranged at their emergence into the motiferous nerves. The clear tough fluid, which distends these tubes, is, in consistence, transparency, and evolution, as different from the nervous medulla of the cylindrical tubes, as chyle or lymph is from blood. I would propose, therefore, for this transparent, evidently homogeneous, least defined, much finer, tough fluid of the cerebral tubercles, the peculiar name of nervous fluid (*liquor nerveus*, (*liquor nervosus* of Haller, naphtha in the sense of the fanciful chemical physicians;) while the term nervous *medulla*, *medulla nervea* is left for the medullary matter of the tubular nerves, and the medullary substance of the brain, if it be not more eligible to name it WHITE SUBSTANCE, since it does not, like the marrow of the bones, lie in a cavity, and in the spinal marrow it even forms the exterior covering.

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* Care must be taken not to mistake for jointed tubes, the cylindrical tubes, which, accidentally or shortly after their emergence from the brain or spinal marrow, have still dissimilar margins. In the former we easily distinguish the granular medullary matter, which I have never seen in the latter.

If any one still deem the direct course of the articulated tubes uncertain, because Leeuwenhoek and Fontana saw and delineated the cerebral tubules as convoluted like intestines, such may be almost completely convinced of the fact without the aid of the microscope, by simple observation with the naked eye, in the fact, that they behold white streaked lines only, which pass into the gray substance. These perfectly straight streaks in the brain are often very distinct, and very strongly marked at certain spots. Upon the importance of further investigation into this form of structure for determining the condition of mental energy, no doubt can be entertained, and much has already been said on this subject in the writings of speculative anatomists, as Gall had already devoted to it great attention. But there is still wanting a much more acute and precise microscopical examination, as a view of the knowledge hitherto acquired, and its application to physiology.

The larger cerebral tubules of the medullary matter converge towards, and pass immediately into, the parts of the base of the brain, where the peripheral nerves arise. Some of the larger jointed-tube matter appears to terminate in the cerebral cavities, in the walls of which I found it well developed. Many pass into the spinal marrow, and thence immediately proceed into spinal nerves. What I have collected upon this important species of structure, I propose to communicate at a subsequent occasion with greater circumspection, and more multiplied proofs of its certainty. The investigation may be at once easy and very difficult,—the former by a hasty desultory glance,—the latter by careful microscopical comprehension. The subject is the most important in the whole range of physiology.

c. Structure of the Spinal Marrow.

The spinal marrow has been sometimes compared to an inverted brain, and the microscopical structure shows that this is well founded. In the brain, the most vascular, more delicate part lies externally, as *cortex;* the less vascular more nervous part interiorly, as *medulla.* This arrangement is reversed in the spinal marrow. The more vascular and more delicate part of the latter lies in the centre, and the coarse medullary matter covers it externally. Both substances are quite like those in the brain. From the external medullary matter consisting of coarse-jointed tubes, the spinal nerves immediately proceed; and the observer may be easily and distinctly convinced, that the jointed tubes, where they emerge from the investing *dura mater*, assume so suddenly the form of nerve-tubes, that they become thicker, and with less prominent swelling pass into the pure cylindrical form. These transitions are pretty easily recognized in the posterior part of the spinal marrow; and even there we find in them, though never distinctly, traces of the proper nervous medulla. Among all the animals examined by me, the spinal marrow showed most inclined to the tubular form, and to the medullary structure in the fishes. Yet in them the medullary matter, and the cylindrical form was found associated with greater consistence and tension, far more distinctly in the muscular nerves, so that an essential difference in structure of the external parts of the spinal marrow towards the latter is always very clearly manifest.

III. Section Third.—*Observations on the cylindrical-tubular structure of the Nerves, as different from that of the brain, and upon the Nervous Medulla.*

α. Nervous Chords.

The optic, the auditory, and the olfactory nerves, as the three noblest nerves of sense, are, as has been already justly inferred from other phenomena, their colour, and their softness, also shown by microscopical results to be immediate continuations of the unchanged varicose medullary matter of the brain. All other nerves, excepting the sympathetic in the middle of its course, differ essentially from the cerebral matter. They contain the fine tubes considerably strengthened in an altered shape and energy.

All the nerves examined by me, excepting the three above specified, and the great sympathetic, consist only of cylindrical parallel-running tubes, normally never anastomosing, about $\frac{1}{180}$th part of a line thick in the middle,—which are the elementary nerve-tubes or the proper nerve-tubes, which united in *fasciculi* or bundles again form larger bundles, which are denominated nerve-chords. Each individual bundle and the entire chords, but, as I have satisfied myself, by no means the individual tubes, are surrounded with a ligamentous vascular covering, (*pia mater*, neurilema). Very frequently different nervous bundles of one and the same nerve are connected by means of false anastomoses, because the tubes pass from one bundle, and run forwards into another adjoining without coalescence of the individual tubes. These are the plexuses, which the nervous roots most resemble, and of which the retina in part forms one. In a very different manner are arranged the ganglia or nerve-knots, which are by no means simple plexuses of the tubes. In the divided roots of the majority of nerves, where they issue from the surface of the brain and spinal marrow, I have recognized between the cylindrical tubes almost equally strong varicose or jointed tubes; but the same also I beheld filled with nervous *medulla*. Whether these nerves, mixed in the manner specified, be the sensiferous nerves, and the pure cylindrical tubed ones be the motiferous nerves, forms a very interesting subject of future inquiry. Perhaps on this point the microscopical structure may furnish new means of attaining to satisfactory knowledge; but I have hitherto not been able to convince myself that definite tubular nerves, at greater distance from their origin, are mingled in their course with jointed or articulated tubes. In the sympathetic trunk, I everywhere see fine articulated tubes void of medulla mixed with coarse cylindrical tubes.

The simple cylindrical unjointed nervous tubes present an essential difference from the articulated cerebral tubes, especially in this respect, that their internal cavity is much larger, and they contain within it a very distinct, less transparent medullary-like matter, which appears to have been often before observed, but with less certainty. In recent living nerves, as I have satisfied myself on the frog, this content of the simple nervous tubes appears like a medullary, almost coagulated substance, divided in a net-like or striated manner, consisting of small, sometimes roundish, not quite regular particles, which by slight pressure may be visibly extruded from the tubes. On the transverse section of each nerve, this is forced out of the individual tube by the proper contraction of its ligamentous sheath, and forms the surface of the thickening of the end of the nerve which then takes place. This medullary substance, which is of a white colour, is that which Treviranus, in his profound researches, named nervous *medulla*, while earlier authors, as Reil, discriminating less nicely, regard the content of the whole fine nervous tubules together, as nervous *medulla*, though they still reckoned the general coverings of the last medullary substance as neurilema. Reil appears not to have known this peculiar nervous substance. To remove all doubt on this matter, it is good to contrast the substance of the optic nerves with that of the other nerves, which is still very different. Solution of this substance in caustic alkali gives very incorrect results, since not only the actual nervous *medulla*, but also the tubes and all the finer parts, however different, appear embraced under the microscope. The tubes and fibres developed in this manner are consequently of as little physiological importance as those of Bogros, (Ann. des Scien. Nat. 1825, p. 5,) or the hollow cerebral fibres of Galen and Des Cartes, which were hypothetical.

[It may be observed that Prochaska has represented, with great clearness and accuracy, in the 6th figure of his seventh plate, the divided end of the sciatic nerve, and the projecting roundish tumour formed by the exclusion of the nervous matter from the nervous canals by the elastic pressure of the *neurilema*. This appearance Prochaska describes as " the medullary matter of that *funiculus*, or nervous thread forced out by the elasticity of the sheath, viewed laterally, and which manifestly consists of mere globules, which globules, however, are so arranged that they not imperfectly resemble straight lines or filaments composed of globules placed in straight lines or rows."

In justice to Prochaska, I think it is requisite to give his description, which certainly I can testify, from frequent personal trials, comes as closely to the natural appearances observed by the eye and good glasses, short of the microscope, as it is practicable to do.

" Another investment of the nerves situate without the cavity of the cranium and the vertebral canal may be justly derived from the *pia mater*, and extends more deeply than the first, as it is given to the nerves at their emergence from the brain and spinal marrow, and appears to be continued to their final terminations. This investment encloses not only the *medulla oblongata* and spinal marrow, but even each of the separate threads (*funiculi*) of nerves thence issuing, as may be seen in the cerebral and spinal nerves without dissection, and externally on removing their cellular tissue. This covering is so strong in tissue, elastic, yet little expansive, that it retains with no feeble compression the medullary matter contained within it, as is shown by wounding a nervous chord in the spinal marrow itself, when the medullary substance is extruded by the opening, as the burst resisting from it, like a mushroom." * * * "Further, not only each of the nervous chords are closely invested by this covering, but even within their medullary substance are transmitted many membranous *septa* or partitions, by which they are divided into various *fasciculi*. From this it may be easily understood that the greater or less firmness of the nerves depends principally on that greater or less density of investment, and the greater or smaller number of the *septa* insinuated between the medullary substance." *

Lastly, it is not unseasonable to remark, that Prochaska, among his queries of points to be still determined, contained at the end of the fifth and last chapter, sect. II. of his treatise, places first the question, " Who can assign the reason why the globular pulp of the nerves require to be so forcibly compressed within the sheaths continued from the *pia mater*, that upon cutting across the nervous chord it should be immediately extruded by the opening, and form a small prominence [*monticulumque efficiat*?" This shows that he had repeatedly observed the fact, though he was unable to assign the reason of it.]

Of the fact that these fibres are hollow, I have in manifold modes completely convinced myself. In the *first* place, there may be distinguished in each tube four parallel lines, two of which form the external boundary lines, while the inner indicate the boundaries of the interior cavity. *Secondly*, it is easy to obtain a view of the tubes distended with medullary matter, when it is expanded without any or without strong pressure,—that is, drawn asunder by two needles. A glass plate is placed on it, and gentle pressure applied, and we observe the tubes previously filled with *medulla* quite empty, while the medullary matter forms at each end a slight swelling. In the *third* place, I have, by progressive gentle pressure, during the process of observing itself, been able to distinguish the progress of the inner substance ; and *fourthly*, I have on transverse sections more frequently most distinctly recognized the areas of the individual tubes. Each of these reasons individually, and, a *fortiori*, all taken together, prove incontrovertibly the hollowness of the nervous tubes.

I have further traced with great care the cylindrical tubes of the motiferous nerves into the cerebral substance, and I have convinced myself that they are immediate continuations of the varicose or jointed cerebral tubes, which, at their emergence from the spinal marrow, gradually lose the varicose shape, by the connecting portions of the spheroidal or egg-like joints becoming larger, and the whole at length forming a uniform cylinder. Of this result I have obtained convincing proofs by great labour, and have at length found that it is easy to be satisfied of the fact, by the individual articulated threads, quite similar to the cerebral tubes, being met in their transition into the simple cylindrical shape in the roots of the nerves without the substance of the brain. The evidence of this formation was important, since it determined this point, that the substance contained within the nervous tubes then first assumes the appearance of DISTINCT NERVOUS MEDULLARY MATTER, when the nervous tubes are already separated from the brain or spinal chord, but that these same *medulla*-bearing tubes, so long as they form part of the brain, and are distinctly jointed or varicose, present a perfectly translucent limpid interior without medullary matter. This also shows that the jelly-like, milk-coloured granular content of the ultimate nerve-tubes is not the cerebral matter invested by a neurilematic canal, as Treviranus represents in his valuable Treatise, but it is a peculiar nervous *medulla*, which is either entirely different from the brain, the fine tubes of which are completely translucent, or is present in it in another far more transparent form than vapour, or of a tough homogeneous viscid fluid, as Fontana already regarded it. Consequently, the brain is manifestly comparable to a SYSTEM OF CAPILLARY VESSELS FOR THE PROPER NERVES.

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* Georgii Prochaska de Structura Nervorum Tractatus Anatomicus, Sect. II. Cap. II. apud Op. Anatom. p. 329. Viennæ, 1800.

In consequence of these results, I have been at some pains to inquire, whether the apparently coagulated substance, which is medullary after death, accumulated in certain spots, and wanting in others, does not form in the nervous tubes during life a continuous granular fluid, and, like the blood, is subjected to circulation, the hypothetical assumption of which appeared necessary to physicians for a long period, till Alexander von Humboldt's intelligent and delicate experiments confirmed Reil's hypothesis of nervous atmospheres, and supplanted these notions. My experiments, so far as they have gone, on the nerves of living animals, have proved to me the existence of no circulation; and it was equally denied by Leeuwenhoek. But whether Leeuwenhoek had observed obscure traces of a circulation, when he speaks of seeing motions in the canals of the optic nerve of the eye, is uncertain. This subject, as a physiological one of the greatest importance, and quite within reach, I recommend to the joint labours of scientific inquirers for determination, especially as it is not very easy to bring under evidence the results of my observations. The mere precipitate affirmation for or against these is of no avail. The doctrine of nervous atmospheres, admitted also by Meckel, may naturally be compatible with the circulation, as this still does not alone elucidate the phenomena of mental energy. Circulation is not directly necessary.

Among the three jointed-tubed nerves of Sense, the auditory nerve deserves especial mention. Almost everywhere I have found the simple tubes of this nerve considerably thicker than those of the others, and also the spheroidal enlargements, though they were everywhere distinctly seen, were flatter and something less prominent. In other respects it was like the other two. I am, from this remarkable circumstance, therefore, enabled to distinguish the sense of hearing from those of smell and sight, because it presents several remarkable phenomena. Thus sometimes in asphyxia it preserves its energy, while the whole of the other vital functions are extinct, and its impressions are far less generally defined, nay, it is the coarsest of the three. With the detailed observations on to the nerves of taste I am still in arrear, and will not speak with confidence. The knotted or jointed arrangement appears indistinct. In the hypoglossal and glossopharyngeal nerves I observed only cylindrical tubes.

b. Terminations of the Nerves.

With regard to the terminations of the nerves, I may be permitted to direct attention to what appears to me an observation not unimportant. I have already mentioned that I have observed in the cortical substance of the brain, (gray matter of the convoluted surface,) with the vascular net-work and the delicate cerebral tubes, next the surface, an irregular free layer of colourless large globules, which probably also Leeuwenhoek distinguished, but which has been passed over by recent observers. Quite similar large granules have been long known as constituent parts of the retina, and here, in connection with a very thick net-work as the division of the *arteria* and *vena centralis*, while the retina itself is the free end of the optic nerve. Of the existence of similar globules, also, at the expansion of the olfactory nerves in the nose, I have satisfied myself. Comparative anatomy observations taught me that in Salamanders *(Triton,)* frogs, and toads, the grains of those parts of the peripheral cerebral terminations are considerably larger than in the other vertebrated animals, and in man. Since, then, these reptiles differ from the other vertebrated animals, and from man also, in a far more considerable size of the blood globules, while the cerebral substance is constituted quite similarly, a direct relation is thus closely established between the granules of the retina, &c. and the magnitude of the globules of the blood. In frogs I have further remarked, that the blood-globules found in the blood-vessels in the brain and the retina, frequently in single rows, appear much smaller and paler than those of the rest of the vascular system, and have actually lost a part of their wing-like coverings. I am therefore of opinion, that the perfectly decolorized globules of the retina and other similar parts may be excreted from the vascular system—probably, as GRAINS immediately emancipated from the BLOOD-GLOBULES, to whose relative size, and whose composition from still smaller globules, they come very near. The surface of the cerebral terminations is probably, therefore, the single point in the whole organic system in which we may recognize with some definiteness the depositions of globules of the blood. Whether a further internal developement of these blood granules, presumed to be deposited from the cerebral tubes, which constitutes the condition of their difference in magnitude, contributes to the perfection and enlargement of the cerebral matter, or to the preparation of the *liquor nerveus* and nervous medulla, and the like, may be subjects of further research; but it is already proved with sufficient clearness, and especially very prominently established by Reil and Soemmering,* that EVERYWHERE THE NERVOUS TERMINATIONS ARE CLOSELY SURROUNDED WITH THICK VASCULAR NET-WORKS, the alternate ratio of which to the nerves has hitherto remained in complete obscurity. Not at all at variance with such a view I find, in embryos and young frogs, the easily observed developement of the cerebral substance of a large or coarse-grained form, from which, at a later period, the cylindrical tubes are first formed.

Several nervous terminations are further distinguished from the peripheral most delicate parts of the brain, by interspersed mace-like or even staff-like bodies, the relation of which to the nervous substance I do not comprehend, though they here and there appear as terminations of nervous tubes. Staff-like something prismatic bodies are found in the retina of the frog and fish, club-like bodies in the Schneiderian membrane of the nose. The largest bodies of this kind, however, I found in the interior of the ganglions, in leeches and similar animals; and I also saw them in the inferior cerebral tubercles in the snake. If they be detached by pressure, a similitude in shape to certain forms of seminal animalcules cannot be distinguished in these bodies; yet other observations forcibly withhold me from making a ludicrous resemblance equivalent to a serious likeness, and I rather avoid it.

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* The economy of the larger animals with more powerful vitality presents an organ left hitherto in obscurity, which in its formation shows structure which came into my recollection in the course of these observations. It is the thymus gland of young Mammalia and infants. Draughts which I had sketched at an early period corroborated my idea, and I have therefore both in man, the calf, and the cat, observed it again. The resemblance or perfect likeness even of the granules, which the lobulated thymus-substance,—otherwise formed of the interwoven elementary filaments and blood-vessels,—presents to granules of blood of the same organism, is remarkable. Does the thymus gland also remain so long a receptacle for the grains of the blood-atoms till the nervous system has attained its full strength and energy? The similitude of the milk of the calf with the brain of the calf in colour, consistence, and also in taste, may be also regarded in the account, as the latter is well known to epicures.

I have been at much pains to trace the ultimate structure of the peripheral articulated tubes to the vascular system; but the retraction of the vascular net-works forms so powerful a source of deception, that I feel myself unable to determine the matter. I have so far, indeed, become convinced that the ultimate anastomosing vascular branches are considerably larger than the articulated tubes, still cognizable among them. Numerous branches of blood-vessels appear further to terminate abruptly without anastomosis, or at least to withdraw their ends gradually from the power of vision. It appears that the present instruments, even of the best construction, form here a limit, which it may be the happiness of futurity to pass; but upon this it will not do to judge precipitately. That in injections no extravasation takes place through the open discharging branches, forms, indeed, no very important objection which I suggested, since the anastomoses of the vascular net-work, before their final terminations, might easily set limits at once to the propulsive power of the blood, and the injected matter in the net-work, which the periodical action of the vital economy with instinctive energy overleaps;—as the pylorus allows the food to pass periodically from the stomach into the intestines, or stops it, and then is considerably dilated and again closed; as in blushing and inflammation, bloodless vessels are alternately filled with blood and discharge it; and as bile, urine, &c. may be secreted in large quantity, scantily or not at all.

(*c.*) The ganglions and the sympathetic nerve.

The nerve-knots or ganglia vary in their structure. All almost have this in common, that they consist of accumulations of articulated or bead-like cerebral tubes, which, either as in the *chiasma* of the optic nerves, alone form the tubercle or knot;—or, as in all the knots of the sympathetic which I examined, are mingled with large cylindrical nervous tubules, which are inclosed within a slender dense vascular network, between the meshes of which organ appear those granules which cover the retina, and meet the ends of the cerebral nerves. In the ganglions of the spinal nerves I saw in birds, however, only tubular nerves, and very large, almost globular, irregular bodies, about $\frac{1}{38}$ of a line thick, forming the peculiar enlargement, which are very similar to a glandular substance, and which I am almost inclined to compare to the calcareous sacs of the frog, which furnish crystals. [These effervesce briskly with acids, and hence, though the prismatic form of the crystals is strongly in favour of such a notion, they cannot be phosphate of lime.] I could very distinctly observe the articulated cerebral tubes of the ganglia, in tracing their course, to become progressively thicker, and in size at length to equal almost the nerve-tubes; yet, so far as I traced them, they presented always, with more or less distinct articulation, a peculiar structure, and never attained in size the diameter of the other cylindrical nerve-tubes. The idea, that the ganglia may be compared to small brains, is favoured by the knowledge of their structure; but the doctrine generally taught, that they were similar only to the cortical substance of the brain, requires rectification in this circumstance, that, though the colour is similar, the substance consists of a mixture of vessels and very slender, scarcely distinguishable articulated tubes, [apparently fine-grained medullary matter,] with true cortical substance, and an excessive quantity of large articulated tubes with true medullary substance. This cerebral matter is deposited in round cylindrical nerve-tubes, which are not changed, but are strengthened by intermixture with the articulated tubes in their *fasciculi.*

IV. FOURTH SECTION.—*Critical remarks on the causes of the difference in the views of observers.*

As we often hear the microscope, that important instrument for increasing the powers of human vision, blamed and rendered suspected, I have thought it advantageous to subjoin some remarks upon the probable causes of the discordance in the views given by observers on the structure of the nerves.

The first observations of Malpighi on the brain previous to Leeuwenhoek were very inaccurate on this account, that this great anatomist of his day raised a great systematic theory on facts imperfectly known. His observations also were confined to the boiled cerebral substance, probably because it was difficult to procure for investigation the soft natural matter of the brain. He compared the boiled brain to a pomegranate full of grains, and found in it glands and vascular *sacculi*, because he sought for them; and he further had the idea, that all the viscera possessed a glandular structure. I have hence in the introduction not spoken of Malpighi as a theoretical anatomist.

The difference between the results given by Leeuwenhoek and those obtained by myself is apparently great; but when accurately considered, it turns out that he has expressed the fundamental features of the recent views. He observed in the brain, vessels, tube-like fibres, and diaphanous globules, though not in their true connection, but evidently crushed by strong pressure. The subsequent observations made in advanced age, were performed without sound judgment on the selection of the subject—an objection chargeable to the observer only. Leeuwenhoek's diaphanous globules, which were believed to constitute the chief part of the brain, and to give it colour, which also propagated the notion still prevalent, that the brain contained many oleaginous drops, which is not the case, are no deception, but the globular contracted fragments of the destroyed articulated tubes, and have hence all, as a SURE CHARACTER, a double boundary line.

Monro was mistaken, when he, without having previously become conversant with microscopical observation, regarded at once as established the first impression of the nervous substance in bright solar light. But these statements he retracted, after he had attained more correct views.

Fontana was mistaken in his inquiries on the structure of the nerves, when he employed a magnifying power greatly too high, and hence deficient in light, and which showed him dark tubes, which he represented as solid cylinders, the outer roughness of which, or rather indefiniteness of figure, deceived him much.

In examination of the brain Fontana was mistaken, when he examined portions of the organ not sufficiently finely cut, and not expanded, or in small contracted portions. It is easy in this manner, by great magnifying power, to procure the same figures.

The mistake of Della Torre and Barba consisted in crushing the cerebral substance between mica and glass-plates, which destroyed all organic texture, and hence showed only mucus and granules, as Leeuwenhoek already had seen, similar, but something better. [Barba, Observat. Microscop. in Cerebr. 1819.]

Observers have recently seen fibrous structure or striated arrangement in the substance of the brain or retina, but have overlooked the remarkable varicose form of the tubes. The reason of this mistake I have also been at pains to discover ; and it appears to me to be in the too low magnifying power, which allows to recognize in the retina and cortical substance, as more delicate parts, a fine tissue of solid smooth fibres. Want of light, also in great magnifying power, and want of adequate magnifying power in the case of much light, operate in this case in like manner in producing the optical impression of solid fibres.

To quiet the minds of several persons, who, I have learned, entertain doubts on the correctness of the varicose tubes, which they might regard as an unintentional artificial product of pressure or water, or any other source of fallacy, I further add, that I saw this articulated or jointed appearance first without water and without pressure, and I can allow no influence to either of these two conditions. I remained sometime in doubt on account of the elastic tension. A tense silk thread falls into wrinkles when its ends are detached, and the tension ceases. Similar wrinkles might also appear here, as joints or knots. But increased pressure on the varicose tubes does not attenuate them to cylinders, though the slice of brain is thrust completely asunder, and is often entirely isolated. On tearing the cerebral substance beneath the microscope, at certain spots, by pressure, very often individual varicose fibres remain as connecting media of the rent portions, and are stretched to the lacerating point without losing their articulated form. Secondly, we evidently see a totally different effect from elastic contraction in the same articulated tubes. If they are first extended by pressure, and then left under the pressure, the articulated tubes, which were previously rectilineal and smooth, appear incurvated, bent, folded, and irregularly convoluted like intestines, which is evidently the peculiar effect of their elastic contraction. It may be further observed, that the cylindrical tubes of the muscular nerves are equally elastic; but in these the rosary or bead-like form never comes into view, however small be the portions employed,—any more than in any other elementary substance in the body; they are merely curled at the edges and incurvated, but are still distinctly the continuations of those which are curled also in fragments.

I formed to myself the idea that the *liquor nerveus* by the elastic contraction after the excision of the medullary portions, collects in knots, and accidentally dilates those places, which constitutes also their irregularity. This circumstance would then betoken a greater degree of contractility or elasticity in the more delicate nervous tubes, the cerebral tubes, than in the coarse, the tube-nerves. But this also is without foundation. Their pressure does not cause that presumed accumulated content to change its place; and in the coarser canals the dilatations are, in proportion to the diameter, often so flat, and where the articulated tubes in their transition sometimes contain distinctly *medulla* and grains, sometimes equally distinctly are quite empty, while the narrow canal is filled, that the form of the tubes, according to my conviction, must be peculiar. But, in whatever mode the matter be viewed, the peculiar capacity of the articulated nerves, viz. the cerebral tubes, &c. to present the rosary or bead-like arrangement continues to form in every circumstance, a very essential difference from the nervous canals, which seldom or never appear so.

Some recent observers have been disposed, by circumstances, different from all those specified, to assign to the nervous substance the character of a granular matter, because they distinctly and correctly observed actual granules. They have been particularly deceived by the granular covering of the retina, the atoms of which the meritorious Meckel names *medullary scales*. This granular layer, most anatomists, and recently Arnold, in his instructive

Treatise on the Eye, regarded as the retina itself, which it is not· Generally the aspect of the retina is perceptibly wonderfully different, and several observers recognize it by no means as a continuation and expansion of the optic nerve, which it, however, truly is. That not the granular layer, but the membrane lying behind it, named serous, which Treviranus has circumstantially examined, is the proper retina, is demonstrated in the recent eye of the rabbit, where this membrane quite distinctly and readily presents the varicose or bead-like cerebral tubes of the optic nerve. The same appearance I have at least once recognized in the human eye little changed. In many other animals I have repeatedly found distinctly the same structure as in the eye of the rabbit. In fishes we see frequently these jointed tubes of the expansion of the optic nerve running backward at once in all directions, like white rays, from the place of entrance of the optic nerve through the selerotica. In the eyes of many other animals, this radiation is, as in man, less distinct to the naked eye; but in the rabbit, the hare, and some other animals they are prevalent in two directions. The fine-jointed tubes, which cause the radiating streaks are, however, arranged otherwise, arranged as *striae* or streaks. They are not all equally divergent from the centre, as the *radii* of a circle, but they form everywhere, as is most easily seen in the rabbit, a nervous plexus, in which the articulated tubes run obliquely to the circumference, intercrossing each other obliquely.

In short, though the retina requires to be investigated still more accurately than it hitherto has been, my view of its structure is at present the following. The retina is a cerebral substance, formed principally by expansion of the optic nerve,—which is covered and penetrated by a thick vascular net-work, in the meshes of which is found anteriorly a thick layer of free grains, which consist of still smaller granules, and have the greatest similitude with the granules of the blood. In some eyes, for instance in those of the frog and fishes, but not in the human eye, I further recognized staff-like, or mace-shaped *corpuscula*, in the circumference of the retina, (not in the centre,) the connection of which with the nerves and vessels continued obscure. Whether the nerve-tubes themselves end in this, it is impossible to determine.

The articulated substance of the retina only, as I understand, consists, like the brain itself, of two parts,—one a very fine gray substance, articulated, so far as is known, (cortical substance,) and the other a more distinctly articulated white substance, (medullary matter). The latter is close to the optic nerve itself, and its fibres are distinct continuations of the same. These forms of structure can be distinguished only in quite recent eyes, not kept beyond a single night.

Arnold gave in 1832 a very different explanation of the structure of the retina, in so far as that which I term retina or reticular membrane, he considers as a mucilaginous layer, and a cellular tissue connecting the granules, as nervous matter. My discovery of the connection of the jointed tubes of the retina, with the perfectly similar tubes of the optic nerve, has further corroborated the above view. Particular chords of the sympathetic nerve, which, according to Ribes, are wont to enter with the central artery and its branches, and to be distributed with it, which he infers from nosological grounds, I have not been able to distinguish, without discovering impediments to its practicability.

[As Professor Ehrenberg has made no reference to the observations of Mr Bauer, as described by Sir Everard Hume, it is proper to mention the following circumstances.

In the second figure of Plate 5, is represented the arrangement of globules passing without interruption across the cortical into the medullary part of the brain ; and in this figure there is something of the jointed or articulated appearance so much insisted on by Ehrenberg, as characteristic of the jointed cerebral tubes.

In the third figure of Plate 5, the globular structure arranged in rows, gives the multiform appearance bead-like, though the beads touch each other, and are not separated so widely from each other as Ehrenberg represents. In this instance, the globules are magnified two hundred times. It seems therefore not unreasonable to conclude, that the chains of globules seen by Mr Bauer are the same objects which Professor Ehrenberg viewed as bead-like or uniform tubes. The intervals given by the latter author are certainly very large compared with the globules; but the general character is not so widely different as at first sight appears.

It is further to be observed, that though in the figures of Plate 4, the globules are represented as large and touching each other, yet in figure third, Sir Everard represents a jointed or knotted tube, which he terms a vein with valves, and which, from its winding tortuous course, was probably a vein, but which, nevertheless, bears a close resemblance to the jointed or articulated tubes of Ehrenberg.

Lastly, with regard to the microscopical examination of the structure of the retina, it seems impossible to doubt the fact, that Sir Everard and Mr Bauer did give a view of that membrane, which was new at the time, and approaches very closely to the account of its structure given by Ehrenberg. Sir Everard represents Mr Bauer to have found its globules disposed in rows, so as to form globular chains of fibres, and these arranged in the intervals or meshes of the vascular net-work, formed by the divarication and anastomosis of its minute branches.]

V. Fifth Section.—*General view of the results of these communications, with some consequences.*

a. Established results.

The Microscope.

The compound microscope shows, according to the history, to all careful observers, the same fact unfolding itself in one and the same mode, and furnishes the knowledge of substantial facts, which may be entirely or partly employed as the foundation of further researches. Of erroneous representations of the objects seen, though these may also be ascribed to the prevailing notions of the time, the observer, and not the microscope, must always bear the manifest blame; and if persons otherwise meritorious have been thereby misled, the cause, as the history distinctly proves, equally lies not in the microscope, but in this, that before its employment in research so minute and intricate organic structure, they did not prepare generally, and labour urgently to render themselves confident in the use of instruments; that they built superstructures on a base whose foundations were not fixed with sufficient stability; or that they wished to recognize the structure of the delicate living brain in the boiled or indurated or dried organ. The most important assistance in acquiring more intimate knowledge of the phenomena of organic life is the compound microscope in the hand of the cautious practised observer; and though we frequently continue to recommend and prefer the simple lens before the compound one, in much stronger magnifying powers, on account of the transparency, this is because the advantage of the latter is still not sufficiently generally known, and not rightly appreciated.

No one who comprehends the extent and intricacy of Nature will expect that the first observation should give a complete knowledge of any one organic structure; but what the good observer ascertains by repeated circumspect trial and just exposition, may then, and ever after be used by his successors as a basis on which sure steps may afterwards be made. Leeuwenhoek was therefore a meritorious observer, because the elements of his observations with very imperfect instruments are at present in many respects valuable, however incomplete they were. Treviranus was on the same account the best observer on the subject under present consideration, between the time of Leeuwenhoek and the present. Uncertainty and want of truth in communication are speedily detected, when the employment of powerful instruments is in general use, and are much less detrimental than neglect of the application of means of assistance so important. I trust that the communications here made, so far as they have gone, may enable us to predict what is yet to be expected, and to recommend a further cautious use of these means of discovery.

The structure of the Brain.

1. The substance of the brain consists neither of granules nor of simple fibres, and is in its larger proportion formed after the model of no other texture, but consists of parallel tubules or cylindrical canals lying fasciculated upon each other, not altogether alternating, but with remarkably regular dilatations, (varicose or articulated,) from $\frac{1}{98}$ to $\frac{1}{3000}$ part of a line in diameter, which converge from the circumference to the cerebral chambers and base of the brain, becoming stronger, are united by no peculiar perceptible cement or cellular tissue, and pass into the spinal marrow, the greater part of which they constitute.

2. The brain, which in its function is evidently a central organ, is in its structure, as Gall already knew, a peripheral organ, and cannot be compared with the heart or stomach as a central organ.

3. The spinal marrow of man and of all the large divisions of the vertebrated animals consists of articulated, jointed, or geniculated canals, entirely as the brain. The finest tubules lie internally, the larger externally, and all the tubules have to each other a predominant parallel disposition. The outer large tubules are immediately continuous with the cylindrical tubules of the nerves of the spinal marrow. This constitutes animal marrow, (*Myeloneura, Medullaria.)*

4. The three soft nerves, or those of proper sensation, and the sympathetic nerve, consist of articulated cerebral canals, which are surrounded in a fasciculated manner by neurilematic canals, (ligamentous fibres and blood-vessels;) and the first of those are immediate continuations of the medullary matter of the brain. Of the latter the substance is mixed. This form I designate articulated or jointed nerves, (Gliedernerven.)

5. In the articulated tubules of the brain, the spinal marrow and the nerves of the extremities is found a perfectly transparent tough fluid, never distinctly granular, the *succus nerveus, liquor nerveus*, which differs from the nervous *medulla*, as chyle does from blood. A manifest motion of the same is not certainly observed, but a tardy progress is probable.

6. All other nervous trunks (I examined the whole of the parent stems) consist not of articulated cerebral matter, but they are CYLINDRICAL FASCICULI inclosed by tendinous or ligamentous partitions and vascular nets, of somewhat larger tubules, which are the immediate but suddenly changed continuations, altogether or almost unarticulated, of the articulated cerebral tubules, and as such are first surrounded by tendinous *neurilema*. These cylindrical tubules, which are known for the

largest and most delicate among the vertebrated animals, are from the $\frac{1}{48}$ part to the $\frac{1}{1000}$ part of a line in diameter. In the vertebrated animals they are frequently from $\frac{1}{120}$ to $\frac{1}{140}$ part of a line in diameter. They appear under various forms and in various functions, since they contain in their interior a peculiar interrupted, granular, as if coagulated medullary substance, which by moderate pressure MAY BE VISIBLY FORCED OUT OF THEM, AFTER WHICH THEY REMAIN EVIDENTLY AS EMPTY CASES, WITH INNER AND OUTER BOUNDARY WALLS. These forms I denominate tubulated nerves, (Rohrennerven.]

7. The nervous matter as well as the brain consists consequently everywhere of articulated tubules, void of marrow, conveying nervous fluid, and cylindrical tubules conveying true nervous *medulla.*

8. The brain contains no nervous *medulla.*

9. A spinal chord of articulated tubules of consistent nervous matter without medulla is wanting to the invertebrated animals. Or the INVERTEBRATED ANIMALS HAVE NO SPINAL CHORD, though the chain of abdominal ganglions distinctly conveying nervous medullary matter, and consisting chiefly of cylindrical tubes, may perform the function of spinal marrow.

10. In the invertebrated animals, which I might denominate spinal-marrowless (*Ganglioneura, Emedullaria,*) articulated cerebral tubes and globules of blood, are cognizable in a smaller proportion.

11. The articulated nerve-tubes void of medulla, according to their proportion to the human organism, and their distribution in the animal kingdom, constitute the more important and noble part of the nervous system, ministering directly to sensation.

12. Generally all the cerebral terminations, though in less degree in the organ of hearing, are interwoven and enclosed with a vascular net-work increasing in thickness, and contain large disseminated globules, the size of which bears a definite proportion to the size of the globules of the blood in one and the same genus of organism, abstracting from this, that in some animals several elementary parts are somewhat larger than in others.

13. The structure of the retina has even in man been hitherto very erroneously described. The granular medullary layer of the anterior surface of the retina is interwoven with a vascular net-work from the central vessels, and behind these two lies the expansion of the optic nerve, which consists of articulated tubes, and is parted into a peripheral or cortical, and central or medullary substance. Separate disseminated mace-like bodies and rods appear between them often to soften the impression of

the light. Their connection with the articulated tubes of the nerves I have not clearly ascertained.

b. Some Reflections and Conclusions.

1. To the brain, according to the estimates of Malpighi and Haller, uniformly a third part of the whole blood of the body is sent. As the brain has been hitherto viewed as a pulp of globules, arranged in the form of solid fibres, it was by no means of consequence to ascertain this remarkable quantity of blood. Agreeably to the constitution of the more delicate anatomical structures, it is more than probable that the blood is applied immediately to a principal determinate organic purpose.

2. The blood consists of a tough almost colourless fluid (*serum*,) and numerous reddish bodies swimming in it. [By this Ehrenberg seems to understand the *Liquor sanguinis* of Babington.] Notwithstanding manifold researches, it has been hitherto impracticable to assign any admissible purpose to the atoms of the blood, only the uninterrupted current of the globules of chyle and lymph, and their wasting rendered necessary a conversion of the former into the latter, and a consumption of the atoms of the blood. That these atoms hold the vascular parietes asunder like peas, in order to pave a free path to the plastic serum, or arrange themselves with care for the muscular fibres, or remain stationary in certain points (in the capillary vessels, which cannot terminate, but must be perfectly retiform), or by arising and ending in vessels without other apparent object than that of a constant transformation, should simply maintain an energy therein, are historical opinions on which I touched something more particularly in the essay read at the Hufeland meeting, *De globulorum sanguinis usu*, in July 1833.

3. The globules of the blood consist, in the vertebrated animals as in man, as Hewson correctly said, of central colourless white grains, quite similar to globules of chyle, not always of uniform size, and reddish homogeneous coats. To inclose the grains of lymph in these coats seems to be one object of the vascular system, and indeed of respiration. In none of the vertebrated animals, but in many, probably the majority, of the invertebrated animals, the coat is detached from the blood-granules.

The grains of the globules of blood consist of still smaller granules of almost uniform size, which I discovered in the mammalia to be $\frac{1}{1000}$ part of a line in diameter, but which in the invertebrated animals are often much larger. These three constituent parts of the globules of the blood are in the reptiles easily seen, in man with greater difficulty; and the grains are less easily dissolved in water than the coats,—a fact also distinctly taught by the important researches of John Müller. The coats of the grains of blood are large in the reptiles, fishes, and birds, but in the mammalia, especially man, they are small.

The granular layer of the retina and the nest-like depositions in the cortical substance of the brain are, according to my views, similar to the granules of the blood, and by their free situation are a little more moveable.

4. The quantity of the globules of blood is in the different forms of organised bodies in a distinctly direct proportion to the quantity of the articulate tube substance in the nervous system,—great where the latter is most abundant, and small where the latter is little,—most in the mammalia and in the human body.

5. A consumption of the grains of the blood globules for the preparation of the *liquor nerveus* of the articulated tubes in the brain, &c. is in the vascular system of the terminations not improbable.

6. The nether layer of such medullary grains which resemble the blood grains is remarkable in the thymus capsule, [which has the shape of a many-celled many-lobed purse,] previous to the mental individuality of the child and young animal, and its wasting corresponds with the developement of the latter. To this analogy I have been led by the comparison of the cerebral granules. Similar granules are presented by medullary sarcoma. Is this an anomalous formation of thymous structure, consequently injuring the organic life? [Deposition of grains of blood with subsequent tabes.]

7. According to my most recent direct inquiries into the state of the living uninjured nerve in the frog, no rapid remarkable motion of fluid takes place in the tubes; and there is rather a deposition of a material very important, as appears, not destined to undergo further transformation, the white nervous medulla or the colourless tubes.

8. Investigation on the state of the final termination of the cutaneous and muscular nerves, which also are inclosed by vessels, shows no deposition of granules in their vicinity. From this it may be concluded that there is an absorption of nervous *medulla* at the terminal ends of the cylindrical tubes.

The ideal figure of an individual nerve-canal is, in my conception, so far as direct observation permits to go, fusiform, with great slenderness and incipient division beyond the middle, swelling cylindrically, and carrying medullary matter, then diminishing, always simple, and losing itself probably among vessels.

I here observe, that I have long recognized the muscular fibres also, though I do not find them hollow, to be fusiform, because each separate cross-plaited muscular thread at both ends passes into a separate slender spiral-shaped tendinous thread. Hence the frequent fusiform shape, and by reason of the dissimilar length of the muscular fibres, the tendinous margins of the bellies of the muscles. To isolate these textures is a very difficult task; and I give the result of four years inquisitive consideration. Whether a similar structure takes place, as was in the nerves, and also in the canals, it is not allowed to determine by the present means of inquiry; and at an earlier period it must have been still less practicable.

9. Would not therefore, seemingly the nervous energy be a secretion from the blood of a material, and especially of these grains; which first, in the form of tough fluid, is collected in the articulated tubes, and gradually in that of nervous medulla is accumulated in the cylindrical tubes, advancing tardily and imperceptibly, till at their ends, it again, as excreted matter, passes into the general absorption.

The distillation of the nervous *medulla* from the blood appears then to be immediately the developement of that mysterious mental process which indicates itself, as sensation, and which, growing with the growth of the body, augments to complete consciousness. The circumstance that man, by reason of the extent and the convoluted disposition of the largest surface of the brain, presents consequently the most extensive secretion of nervous fluid, may bear a direct relation to his mental energy.

SUPPLEMENT.

The foregoing results of my researches were communicated, on the 23d April 1833, to the Academy, at a meeting of the physical-mathematical class; and in order to accelerate the useful application of the facts communicated, an abstract of it was published in Poggendorff's Annalen der Physik, Band. xxxviii. 1833. I then extended the observations in many directions, and wrote a Latin congratulatory letter to Hufeland, on occasion of his Jubilee, on the 24th July 1833, *De globulorum sanguinis usu.* A detailed report upon the same subject, with the above named figures, I communicated to the general meeting of the Academy, on the 24th October of the same year. These communications have found many partizans; and I think it may be useful to add a few remarks thereon.

Those friends and anatomists who witnessed the phenomena, forthwith expressed their persuasion, that these phenomena appeared to them exactly as I represented them. With Professor John Muller, I soon examined the nervous roots in the frog of the separate sensiferous and motiferous nerves, and the examination furnished no essential difference in their microscopical structure, as I already knew. But Professor Krause, in Hanover, speedily added some other circumstances to the subject. He represented the cerebral fibres as solid fibrils, and as soluble as water, and the dilated swellings which he also recognized, he regarded as peculiar globules, which he denominated nerve-globules. I stated the grounds of my dissent from these views at the same time in the 31st volume of Poggendorff's Annalen, 1834. Not less different from my representation of the matter were also the statements of Professor Berres in Vienna, which appeared in the Medical Annals of the Austrian States for 1834. Professor John Muller, however, soon expressed himself publicly in his Manual of Physiology, from the results of personal researches, as very much in favour of the general view; and there appeared in Muller's Archiv of Physiology, an essay of Dr Valentin, a pupil of Purkinje in Breslau, which accorded with this view of mine in several important points. He assures us, for instance, that he observed directly, not only the internal area, and the internal cavity of the cylindrical tubes, but also the articulated tubes, of which I, with the means of assistance at my command, have reason to doubt, though with more perfect aids it is practicable. The grains of the retina he regards, from their size, as not perfectly analogous to those of the blood, the size of which is everywhere very different. He searched for manifest orifices in the blood-vessels, which, however, appear to be unnecessary, since there are enough of terminations of branches which discharge freely. The articulations or joints of the articulated tubes, he considers to be accidental products, but which, from the above statements, is inadmissible.

Rudolph Wagner admits, without objection, in his work on Comparative Anatomy, the whole of the leading statements made by me. Professor Volkmann of Leipsic gave lately in his new contribution to the physiology of vision, 1836, a very similar description of the subject from his own observations; but he did not distinctly observe the inner areas of the canals, and thinks with Krause, that we may have been deceived with the inner contour as in the case of a hair,—a thing possible certainly with desultory single observations, but which cannot take place, where the area and progress of the content, and the fulness and emptiness of the tubes, were observed and carefully considered. The great softness of the substance has led him further to take the fragments lying between rent parts for drops of oil. His figures of the articulate tubes and the tubular nerves are, even to the less sharpness of the lacerated edges, and the want of selection of fully turgid tense canals, perfectly correct, and closely accordant with my views. It results also from his communication upon the retina of the fish, in which he could see only pulpy matter, and no articulated tubes, which, however, he saw distinctly, as I did, in other eyes, that the investigation of the most slender parts of these structures requires longer familiarity with the subject, as I have already devoted to it. The enlargements of the varicose fibres he agrees with me in regarding as a real, not an accidental structure, (p. 17,) and adduces in support of this satisfactory reasons drawn from his own experiments. The grains of the retina he regards as essential parts of that membrane, but confirms the proposition of similar though not so uniform grains between the various cerebral tubes, (p. 9.) In an appendix the author retracts (p. 198) the statement, that the retina is formed of articulated tubes after he received the Memoir of Treviranus, and describes the predominant structure of the retina, certainly not correctly, as cylindrical fibres; but in p. 200 he allows again that it consists of swellings.

I have closely traced these fibres of the retina in the rabbit, and in several fishes, and I am convinced that they are only the articulated tubes of the optic nerve. That the articulated tubes have in many places fewer, in others more numerous, dilatations, should be no impediment to the more early view; and their being void of marrow and filled with white *liquor nerveus*, as happens to both, distinguishes first the articulated tubes of the nervous system, and though sometimes the knotty swellings are more scanty in so short spaces, which may for the microscope be termed long, they are isolated quite sufficient to impress the character. In like manner, apparent or even real knotty swellings in the cylindrical tubes, though here and there though rarely they appear abnormally, or as marks of stages of developement, cannot, however, be admitted as the general predominant formation. Empty blood-vessels also are not white, but colourless and diaphanous; whereas the radiations in the eye of the rabbit are white, and the canals unramified, which is never the case with blood-vessels.

Godfrey Reinhold Treviranus, the most eminent biologist of our time, has, in his last work, CONTRIBUTIONS TO ILLUSTRATE THE NATURE OF ORGANIC LIFE, again brought forward his opinion upon this structure supported on new grounds. After beginning " among all animal substances, no one requires management so delicate as the brain," he allows, at p. 29, " that the transition of the medullary tubes into the nerve-canals is exactly as I have stated it, but in two important points he is of a different opinion. *First*, He denies the reality or constancy of the bead-like arrangement in the articulated tubes, which, however, is not a fallacy, but accidental, and it ensues sometime after death. Air and water, he thinks, change immediately the true shape of the tubes, (p. 31.) He saw also once the *nervus abducens* of a sparrow with articulated tubes, (was it also as regular as void of medullary matter,) though it be not a nerve of secretion. All the tubes are originally cylindrical. *Secondly*, I have not, he thinks, recognized the nervous cylinders of the cortical matter, which were, however, distinctly apparent. It may be difficult in expression to move rightly in structures so minute, and it has certainly placed only the difference in my preliminary account. The figures accompanying this memoir will readily remove all such doubts. The tubes of the cortical substance I have by no means denied, or rather the whole substance have designated as a mass of vascular net-work of very fine cerebral tubes, and heaps of small granules of blood. In other respects, the articulated tubes, which are very distinct in the neighbourhood of the medullary substance, and also at the periphery of the brain, are so minute, that my best microscope could show the connecting parts of the small vesiculated joints very feebly, sometimes not at all. I hence believe, that Treviranus may understand the distinct tubes only near the medullary substance, while I understand the crossing cylinders, which are seen distinctly dense at the surface of the brain, not at all as cerebral substance, but I recognize in these the short, anastomosing, most bloodless branches of the vascular system, which are also without trace of vesicular dilatations. As to the articulated form, I must yet repeat, that all the above assigned causes, inducing a change in the tubes, are included by me, and that on account of the great generality of the phenomenon, I must regard it as something constant and real. As the labour of such an inquirer is always rewarded, Treviranus has made a very important discovery in this, that he has recognized the mace-like bodies in the retina and Schneiderian membrane, as immediate continuations of the nerves. The mace-like bodies themselves have been already long known to me; but I was unable clearly to perceive their connection, and I have at present no proper, certain element thereon, though I have represented these forms of structure in several modes in the plates referred to. Similar, much larger mace-like bodies are found in the brain and the ganglia of the invertebrated animals, and in some birds I saw like bodies in the ganglia. From the careful observations of Remak, which are also published in Muller's Archives, I infer that he views the articulated tubes as constant, but saw the cylindrical tubes more frequently conveying medullary matter with the advancing developement of the body.

If the sensiferous roots of the nerves taught by Sir Charles Bell, and at present generally admitted, but which are to me not perfectly clear, should be fully established, the predominance of medullary canals in them would be extraordinary, since in the nerves, which are most clearly devoted to pure sensation, the cylindrical shape and medullary matter are altogether wanting. A character so definite would be to me unintelligible. I would rather, in case there are special sensiferous roots as subject of research, unless they be unnecessary, so understand the phenomenon, that their elementary tubes issue immediately from the brain, while the motiferous, without evident sensation, proceed from the spinal marrow or the ganglions. These, however, are fruitless speculations. We must previously observe still more deeply.

Explanation of the Engravings.

The majority of these figures are true copies of the objects seen, and indeed not of the first, but the most successful preparations, where the peculiarities were most distinct.

All these figures are formed, when another degree of magnifying power is not particularly specified, after one and the same, generally an enlargement from 260 to 360 times in diameter. The largest cylindrical tubes are magnified 300 times. The figure is sometimes $1\frac{1}{2}$ Paris line in diameter, consequently the object, when the figure is accurate, is $\frac{1}{200}$ part of a line large. The largest articulated tubes in Fig. 2d are magnified to an equal degree, but two lines broad, and they were $\frac{1}{150}$ of a line in diameter. Such measurements must indeed be always specified, but it is requisite to avoid pedantic minuteness.

Plate II. Articulated nerves, *a* to *k*.

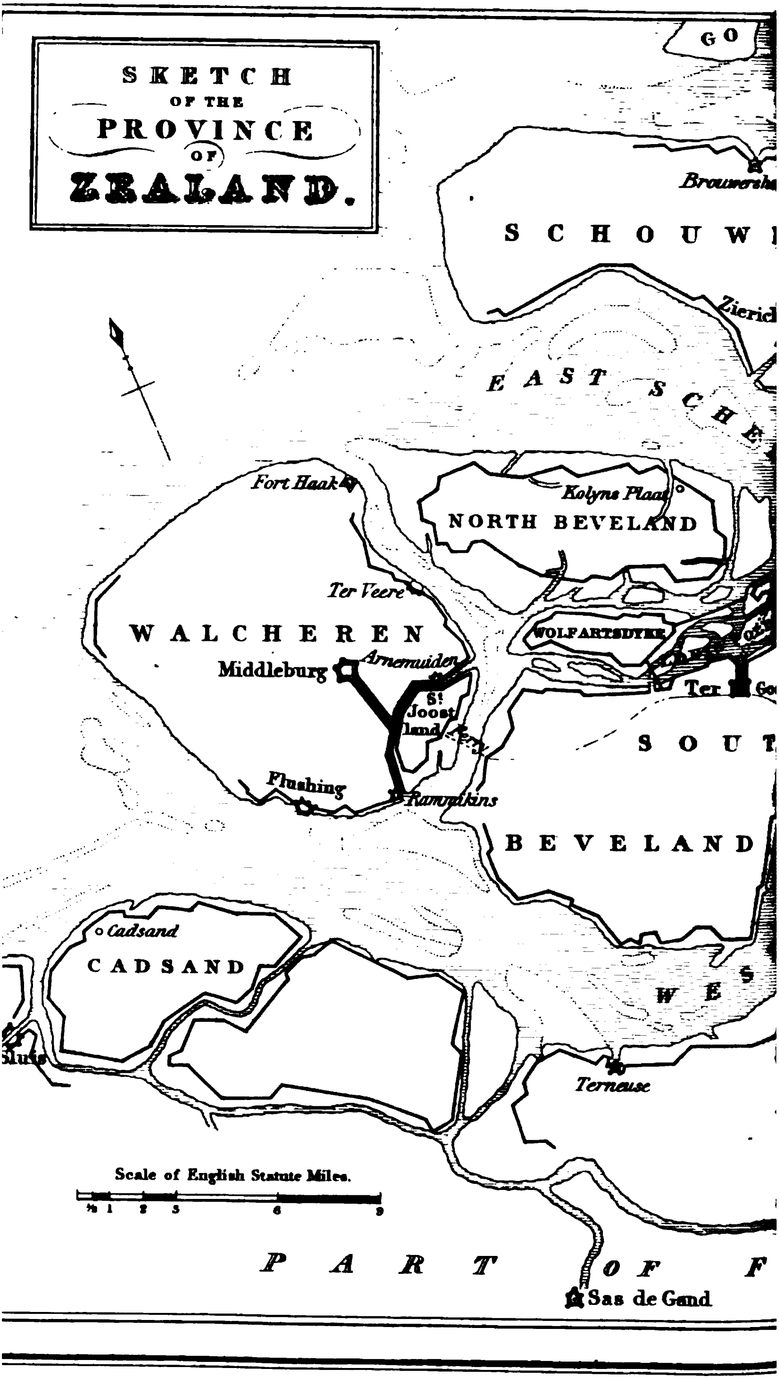
Fig. *a*. Structure of the *medulla oblongata*. The thickest jointed tubes $\frac{1}{300}$, finest $\frac{1}{1000}$ of a line. *b*. Middle medullary substance of the brain $\frac{1}{300}$ to $\frac{1}{1000}$ of a line. *c*. White matter of the spinal marrow $\frac{1}{500}$ to $\frac{1}{300}$ part of a line. *d*. Substance of the olfactory nerves, with some very thick almost cylindrical tubes, from $\frac{1}{150}$ to $\frac{1}{400}$ part of a line in diameter. *f*. Substance of the optic nerves $\frac{1}{500}$ to $\frac{1}{300}$. *g*. Decussation (*chiasma opticum*) of the optic nerves from $\frac{1}{500}$ to $\frac{1}{300}$ part of a line. *h*. Retina with the medullary grains, articulated tubes $\frac{1}{2000}$, medullary grains $\frac{1}{300}$; nucleus of the medullary grains about $\frac{1}{2000}$. *i*. Some articulated tubes of the retina 800 times enlarged. *k*. Globules of the blood and their *nuclei* or granules, which are much alike in size, and are separable into still smaller granules.

Mixed and pure cylindrical nerves.

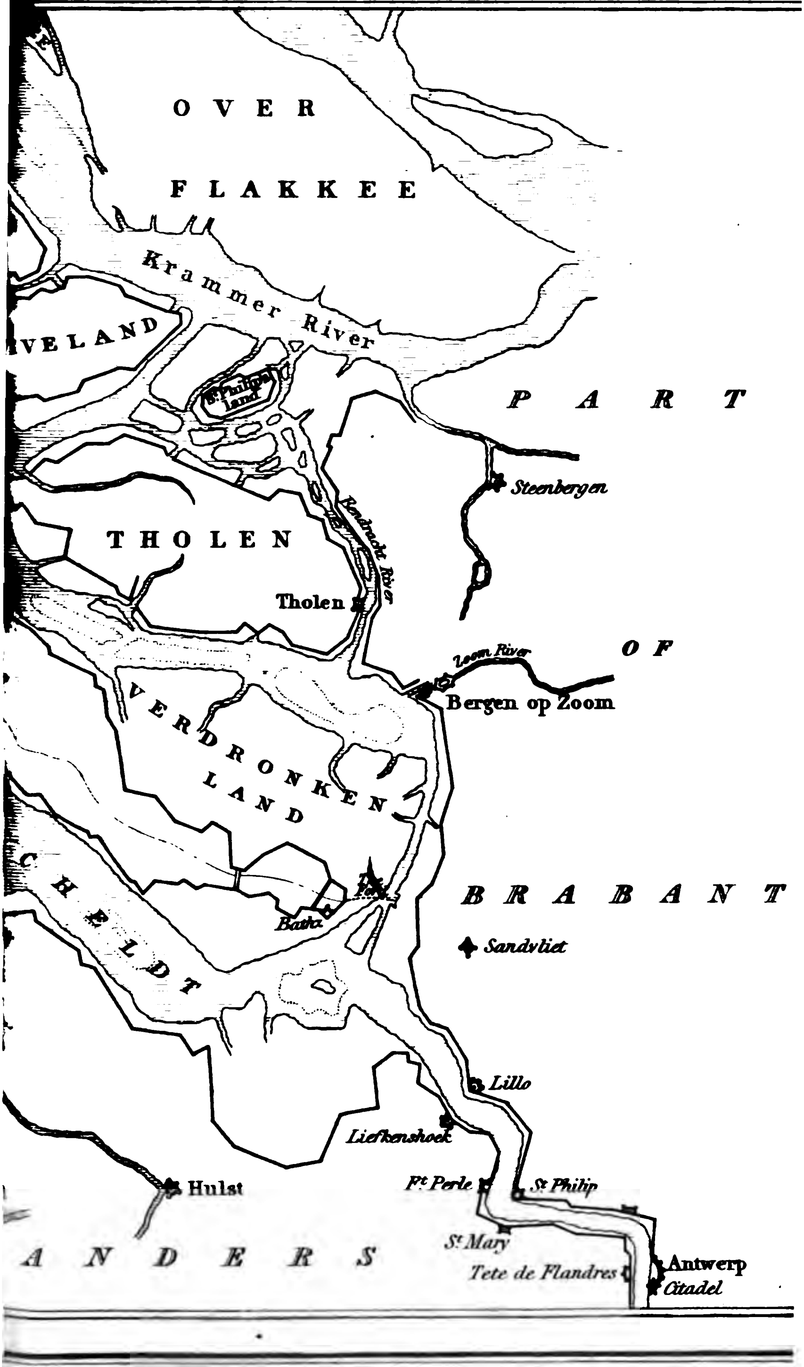
Fig. *l*. Structure of the *nervus divisus*, artificially separated from each other; thickness of the tubes $\frac{1}{500}$ to $\frac{1}{300}$. *m*. structure of a vertebral ganglion with mixed nerve-tubes and some medullary grains. *n*. structure of the *nervus oculorum motorius*, with pure cylindrical tubes, which partly are still filled with *medulla*, and partly by pressure, have been emptied of their *medulla* in separate points. Thickness $\frac{1}{200}$ part of a line.

Plate III. Mixed and pure cylindrical nerves continued.

Fig. *o*. The *nervus trochlearis* as before. The conjoined opening of the middle tubes is the individual observation of this nature. *p*. the *nervus abducens* with tubes mostly emptied by pressure; thickness $\frac{1}{400}$ part of a line. *q*. the facial nerve as before. *r*. the *nervus vagus*; thickness $\frac{1}{400}$ part of a line. *s*. the hypoglossal nerve, all the tubes filled with *medulla*; each $\frac{1}{400}$ part of a line thick. *t*. the glossopharyngeal nerve, still quite filled with *medulla*. *u*. the



SKETCH OF THE PROVINCE OF ZEALAND.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VERDRONKEN LAND
CHELDT
Fort
Batz
BRABANT
Sandvliet
Lillo
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ANDERS
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Fig. 1.

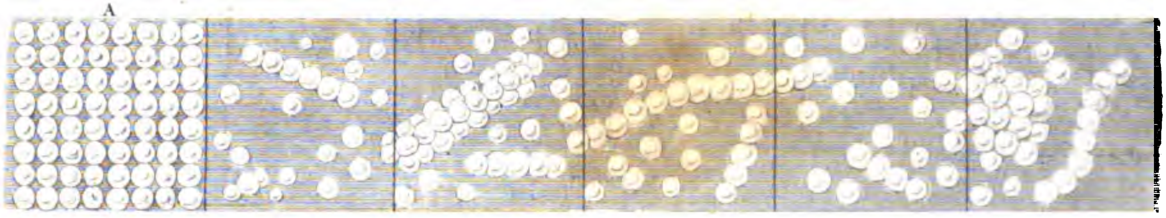


Fig. 3.

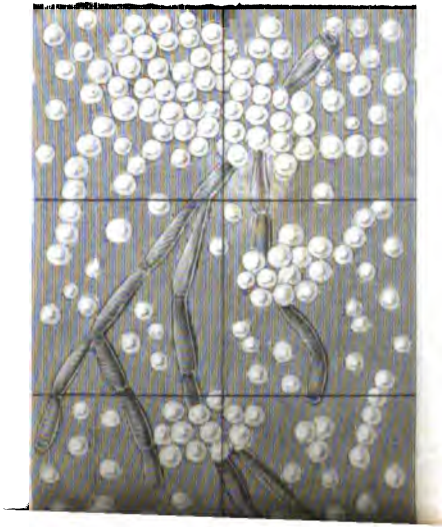
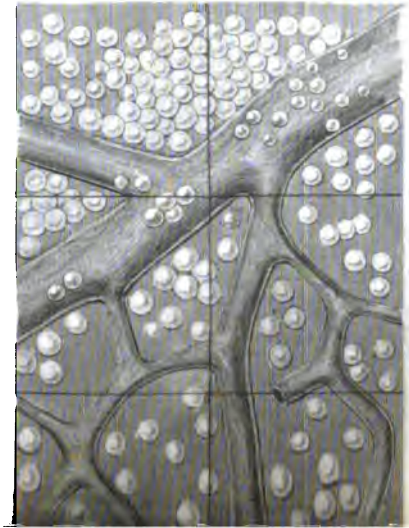
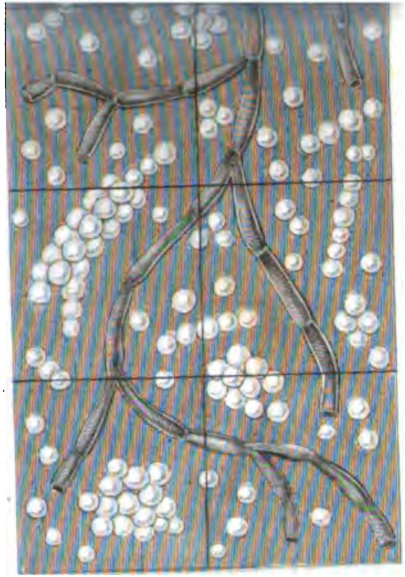


Fig. 4.





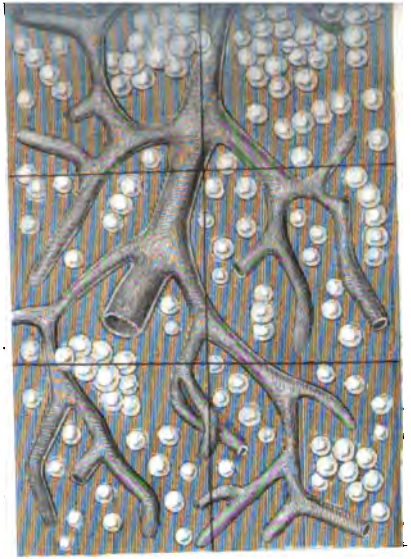


Fig. 2.

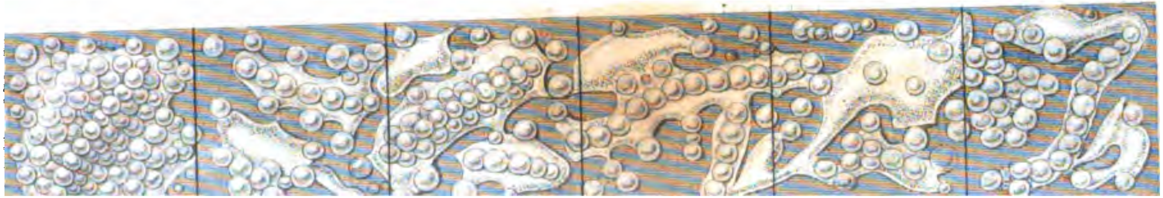


Fig. 1.

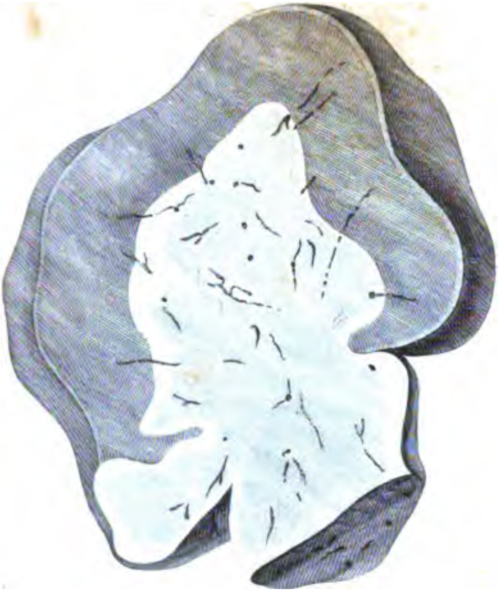
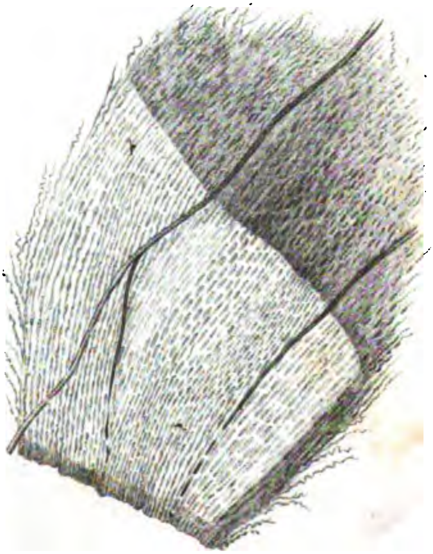


Fig. 2.



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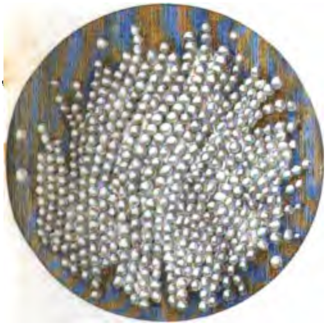

accessory nerve, with canals partly emptied by pressure. *v*. The intercostal nerve emptied by pressure. *x*. The ischiatic nerve at its roots.

In the most of these nerves the areas of the inner cavity could be seen at the cut surfaces; *y*. A magnified portion of the recent medullary capsule, which has been hitherto described as the thymus gland from a still-born child, with its net-work of elementary fibres, large blood-vessels, and the medullary substance, deposited quite similar to large granules of blood.

Plate V. and VI.

These are the views given by Sir Everard Home, of the appearances presented to Mr Bauer by the brain and nerves.

Plate V. contains several small parts of glass micrometers, when the inch is divided into 400 parts in diameter, which divides the surface into 160,000 parts; so that each object is magnified 400 times in diameter, and 160,000 times in superficial extent.

Fig. 1. In the first square at A are represented the most predominant globules in the brain, $\frac{1}{3200}$ part of an inch. The other squares contain many loose globules of various sizes, and fragments of bundles of simple globular fibres of the medullary substance of the recent brain, immersed in water.

Fig. 2. represents the same objects in a dried state, when the accumulated mucus and some newly produced globules become visible.

Fig. 3. A small portion of the medullary substance of the brain diluted with water, also fragments of single globular fibres, many loose globules, and a portion of the venous branches with valves.

Fig. 4. A small portion of the retina of the human eye diluted with water,—consisting of loose globules and globular fibres, of the same size as those of the brain in its various parts; also a branch of an artery whose anastomoses form a minute net work.

Plate VI. Fig. 1. A small portion of the recent human brain, after immersion in distilled water; magnified five diameters.

Fig. 2. A smaller portion magnified twenty-five diameters, showing the arrangement of the globules in straight lines, passing without interruption across the cortical into the medullary substance.

Fig. 3. A still smaller portion magnified two hundred diameters, so as to render the globules conspicuous.

ART. II.—*Contribution to Statistics of the Sickness and Mortality which occurred among the troops employed on the expedition to the Scheldt in the year* 1809. By HENRY MARSHALL, Deputy Inspector-General of Army Hospitals.

1. *Object, progress, and result of the expedition.*—The object of the expedition is thus stated in the instructions from the King, to his "Right Trusty and Right Well-beloved Cousin and Councillor, John Earl of Chatham, Lieutenant-General of

the Forces," who commanded the expedition. "This conjoint expedition has for its object the capture or destruction of the enemies' ships, either building at Antwerp and Flushing, or afloat in the Scheldt, the destruction of the arsenals and dockyards at Antwerp, Terneuse, and Flushing, the reduction of the Island of Walcheren, and the rendering if possible the Scheldt no longer navigable for ships of war." Including the naval branch of the service, the whole armament amounted to about 70,000 men, which was, I believe, the largest expedition that ever left the shores of England.

On the 28th July, the first part of the expedition sailed from the Downs at five o'clock in the morning, and anchored at seven in the same evening, in the Steen Deep, within three leagues of the coast of Walcheren. The remaining portion or left wing of the army came to anchor on the 29th July.

30th July.—Lieutenant-General Sir Eyre Coote, with a division of the army, consisting of from 12,000 to 13,000 men, landed near Fort Haack, in the Island of Walcheren. The small Fort of Ter Veer was invested on the 31st, and the men surrendered during the night. Head-quarters at Grypskercke.

1st August.—Sir Eyre Coote with the troops under his command moved forwards for the investment of Flushing. The same day a landing was made by Lieutenant-General Sir John Hope and the division of the army under his command, near Goes, in South Beveland. Head-quarters Middleburgh.

3d August.—The troops in South Beveland moved towards Fort Bathz. Accident threw this fort easily into our hands. A party of the guards, it is said, consisting of about thirty, strolled from the army, and finding no obstruction proceeded along the dike till they found themselves unexpectedly before it. The Governor (General Bruce) taking them for a detachment from the main force, spiked the guns, destroyed the ammunition, and crossed over to Bergen-op-Zoom with the whole garrison, which consisted of 600 men. General Bruce was punished for misconduct, being degraded by Louis Bonaparte, and declared unworthy to hold any military rank.

6th August.—The construction of a mortar battery before Flushing was commenced.

9th August.—The division of the army under Lieutenant-General Lord Huntley, and the infantry of Lord Rosslyn's division, were landed on the Island of South Beveland.

13th August.—The bombardment of Flushing commenced. To reduce a town by bombardment instead of a regular siege is very seldom adopted. Among civilized nations, it has become a principle to spare as much as possible the lives and property of individuals who are not actually engaged in the service of the state against which an army is employed. By wilful destruction of the property and lives of the inhabitants of a fortified town, we greatly aggravate the horrors of war, which it is our duty as far as possible to mitigate.

15th August.—Flushing capitulated. As the artillery had been directed against the most densely inhabited quarters, and as nearly 10,000 rounds of ammunition were expended, the effect was dreadful,—scarcely a house in the town escaped damage, and in many the roofs were forced in, and the interior exposed to the weather. The town was set fire to in several places, and the houses continued burning during the bombardment. The consequence of this mode of attacking the enemy was eventually injurious to ourselves, in as much as the means of comfortably accommodating the troops, and especially the sick, were greatly limited, which is the reason I have here alluded to the military operations in question. In several of the Flushing hospitals, the roofs had been greatly injured by the shells, and the patients therein accommodated were exposed to the weather. To remedy this defect, workmen were sent from England, but, as these men soon became sick, the repairs made but slow progress. It is stated that some of the soldiers were quartered in cold and damp churches, without beds or any other accommodation of that kind, except the covering of a great coat, and a knapsack for a pillow, and that the hospitals were established in warehouses, into which light and air were admitted only through iron grates.—*(Edinburgh Annual Register, 1809.)*

During the siege the King's approbation was signified to Lord Chatham for the promptitude with which he had commenced, and the vigour with which he had conducted his operations, and he was again commended for his perseverance and celerity. General Monnet, who commanded the garrison, was dismissed from the French army with disgrace, for surrendering while he had still 4000 men fit for duty: for it appears that by far the heaviest loss fell upon the burghers, and that the soldiers suffered comparatively little.

20th August.—Sickness began to show itself among the troops in South Beveland. The number of sick this day was 1564.

21st August.—Head quarters were moved to Ter Goes, in South Beveland. Some of the troops in Walcheren embarked and proceeded up the Scheldt towards Fort Bathz.

23d August.—Head-quarters were removed to Crabbendyke, within four miles and a half of Fort Bathz. Sickness increased very much within the last twenty-four hours.

24th August.—Head-quarters removed to Bathz, which is the southmost point of South Beveland, and about twenty miles from Antwerp.

26th August.—The sickness continued to increase rapidly. The number of sick amounted to 5000 rank and file.

When the sickness first began to appear it was imputed by the non-medical part of the army more to accidental and temporary causes, than to the climate and soil of the country. Among these alleged causes I may mention the stench proceeding from the half-extinguished fires in the town; an inundation which had spread widely through the British lines at Flushing; and the exhalation from the dead bodies of the enemy, which had been laid in heaps, and just covered over with sand, more for the purpose of concealment than of burial. The water also which they drank was said to contain insects, and consequently to occasion sickness and vomiting. This opinion had so much weight in England, that it was deemed expedient to send over water for the garrison, and the requisite quantity was calculated at 500 tons per week. The men themselves, it seems, never complained of the water; and when the first importation arrived, it appeared to be so little wanted, that Sir Eyre Coote, at the recommendation of the principal medical officer, gave it to the navy.

27th August.—A council of war was held, and after having maturely weighed the important subject referred for their consideration, the members, who were all Lieutenant-Generals, were unanimously of opinion that the undertaking of the siege of Antwerp was impracticable. The ultimate object of the expedition was consequently abandoned.

28th August.—The sickness increased; some of the general and many of the other officers were seized with fever; number of men on the sick list was about 4000. The transports with the cavalry were ordered to sail for England.

29th August.—Head-quarters returned to Ter Goes. The force estimated to be left on the Island of Walcheren, which it was proposed to retain possession of, amounted to 16,766 rank and file, and it was resolved to send home the remainder of the troops as soon as the sick were got off, the captured guns embarked, and the batteries dismantled.

31st August.—"Sickness still increased, and, as in every case, the actual numbers brought for embarkation were much greater than stated in the returns given to regulate the appropriation of transports. The additional numbers arising from the continual occurrence of fresh cases of sickness were put on board other ships, which occasioned a deficit of tonnage. In other cases, the sick were embarked with the well, from the want of sufficient means which the extra accommodation for sick required. The embarrassment had now unfortunately far exceeded what could have been speculated upon even by those who best knew the effects of this unhealthy climate, and it was consequently beyond the means of our hospital establishment, either to furnish attendance or comforts to the extent required. The officers of the medical staff suffered very much from the disease, and deserved the greatest credit for their unremitting attention to their painful duties."—(*Journal of the Army.*)

1*st September*.—The number of sick in South Beveland was upwards of 5000; a great number were conveyed in waggons from Ter Goes to the ferry, and crossed into Walcheren.

2*d September*.—Head-quarters removed to Middleburgh. Operations for the evacuation of South Beveland in progress.

3*d September*.—The number of sick amounted to 8194.

4*th September*.—The troops in South Beveland embarked early in the morning, the guns, carriages, stores, &c. being taken off, and the magazines blown up. The evacuation was completed by three o'clock P. M.

7*th September*.—The transports with the troops ordered to England sailed. The sick of the whole army, including those sent to England, amounted to upwards of 10,948.

10*th September*.—Sick in Walcheren 7396.

14*th September*.—Lord Chatham returned to England, and the command devolved upon Sir Eyre Coote.

29*th October*.—Lieutenant-General Sir George Don assumed the command of the troops in Walcheren.

13*th November*.—An order for the evacuation of Walcheren was issued. The British government seems to have hesitated much before they resolved upon ordering the troops to be totally withdrawn from Zealand. Lord Liverpool said in his order to destroy the works, that it was now determined to evacuate the Island of Walcheren, unless some new circumstance should occur in the progress of the operation which might render an alteration in this decision expedient.

23*d December*.—The island was completely evacuated by the army. The demolition of the works and the embarkation of the troops occupied a month.

2. *Strength of the Expedition*.—The number of troops, including officers employed, seems to have been between 42,000 and 43,000 men, namely,

	Officers.	*Soldiers.*
Troops of the line, -	1738	37,481
Artillery and Artillery Drivers,	126	3108
	1864	40,589

The naval branch of the expedition consisted of 35 sail of the line, 2 fifty gun ships, 3 of forty-four guns, 18 frigates, 179 transports, and a number of smaller vessels,—the whole armament being estimated to consist of at least 70,000 men.

3. *Medical Staff.*—The medical staff consisted upon the embarkation of the troops of

1 Inspector of Hospitals—Sir John Webb,
3 Deputy Inspectors,
5 Physicians,
1 Purveyor,
2 Deputy Purveyors,
18 Staff Surgeons,
2 Apothecaries,
4 Dispensers,
12 Clerks, and
30 Hospital Mates.

Subsequently the following officers were added,

2 Physicians,
4 Staff Surgeons,
1 Deputy Purveyor, and
8 Hospital Mates.

Sir John Webb was taken ill on the 13th September. The duties of the medical department were administered by Deputy-inspector Burrows, until the arrival of Sir James M'Grigor, who assumed the charge of the department on the 1st October.

On the 28th September the principal officers of the army medical department were directed, by a letter from the Deputy-Secretary at War, to communicate with Dr Borland, Dr Lempriere, and Sir Gilbert Blane, for the purpose of their proceeding to Walcheren, in order to examine into the nature and tendency of the malady prevalent in that island.

These gentlemen transmitted a report to the Secretary at War, bearing date Middleburgh, 10th October 1809, "On the prevailing malady among his Majesty's forces serving in the island of Walcheren." Except two letters from Sir Gilbert Blane to Sir Lucas Pepys, this report is the only official medical account of the disease, as it appeared in Walcheren, that I have seen. Dr Borland and his coadjutors returned to London on the 12th or 13th October.

4. *Topography and Climate of the Province of Zealand.*—About ten or twelve miles below Antwerp the Scheldt divides into two branches, namely, the East and the West Scheldt. Between these branches, or great estuary of the river lie the three islands which constitute the Province of Zealand, viz. South Beveland, Walcheren, and North Beveland. South Beveland is by far the largest of the three islands; its length is 25 miles from east to west, and its greatest breadth is between 8 and 9 miles. A channel of the sea separates Walcheren from South Beveland. Walcheren is 13 miles from east to west, and 9 miles from north to south. There are two considerable towns in this island—Flushing and Middleburgh. Flushing, which

is situated at the mouth of the Scheldt, is 45 or 50 miles from Antwerp. The surface of the islands of Zealand is flat and low, being in some places below the level of the sea at high-water. As the water percolates through the banks, and accumulates by rains, much care and labour is required to remove it, which is commonly effected by means of sluices and mills. The water is collected in ditches and canals, and conveyed to the points where it can be most conveniently discharged over the banks. Inundations also occasionally occur, and as the water stagnates, the grounds are frequently left covered with slime and mud. The soil is excessively fertile, and produces corn, abundance of fruit, vegetables, and madder.—(*See the prefixed Sketch of the Province of Zealand.*)

5. *Indigenous Inhabitants of Zealand.*—The indigenous inhabitants of Zealand are said to be very liable to endemic fevers during summer and autumn. They have in general a very unhealthy aspect: the skin is sallow or yellowish, and sometimes it pits on pressure; the muscles are soft, yielding, and inelastic; the abdomen is tumid, while the limbs are small; but as we have no accurate statistical report of the ratio of sickness, it is impossible to arrive at any definite conclusion on that subject. The following tables will furnish some particulars of the movement of the inhabitants of this province. I am indebted to Malte Brun for the materials.

Table I. showing the ratio of population in Zealand, and the late Kingdom of the Netherlands, to births, marriages, and deaths, and the number of children to each marriage.

	Rate of increase of population for 5 years—1825.	*Number of inhabitants in* 1824, *for*			*Ratio of births to marriages in* 1824.
		One Birth.	*One Marriage.*	*One Death.*	
Zealand, -	0.056	20.7	113.7	31.4	5.49
Netherlands,	0.062	27	132.4	43.8	4.90

The statistics of the kingdom of the Netherlands have been adduced for the purpose of showing the relative movement of the population in Zealand and the whole kingdom.

Table II. showing the annual ratio of births, marriages, and deaths per 1000 of the inhabitants of the Province of Zealand.

Annual ratio per 1000 *of*		
Births.	*Marriages.*	*Deaths.*
48.3	8.7	31.8

In 1815 the population of Zealand amounted to 111,108, and in 1825 it had increased to 129,329, consequently the increment for a period of ten years was 16.4 per cent. or 1.6 per cent. per annum. How far the increase of population may have arisen from immigration I have no means of estimating. We are informed by Mr Milne, in his work on Annuities, (Vol. ii. p. 453,) that in the ten years ending with 1810, there died annually in the marshes of

Cambridgeshire	1 person	out of	33.64
Essex,	do.	do.	39.10
Kent,	do.	do.	33.63
Lincolnshire,	do.	do.	33.76

and that in the parish of Spalding, which is situated in the lowest part of the fens of Lincolnshire, 1 person out of 31.24 died annually between the years 1797 and 1812.

It will thus appear that the ratio of mortality in Zealand is a little higher than it is in the marshy parts of some of the counties in England, and about the same as in Spalding. In the majority of European states, the annual births amount to 1 in 30, consequently we may conclude that the ratio of births in Zealand is unusually high. The rate of mortality in Europe ranges from 1 in 30 to the lowest rate (in England) 1 in 50.

As the mortality in Zealand is 1 in 31.4, this may be considered as a high rate of mortality.

The following comparative statement of the rate of mortality in five different places will show the relative rate which occurs among the population in Zealand.

Table III. Showing the annual rate of mortality out of every 1000 living

in Zealand,	(1 year's observation)	31.8	
Glasgow,	(15 do. do.)	28.	British Medical Almanack
London,	(18 do. do.)	28.	
Sweden,	(21 do. do.)	28.	
England and Wales,	(18 do. do.)	21.	

In England during a recent period the rate of increase of the population has been 16 per cent. every ten years, or 1.6 per cent. per annum, which is said to be twice as great as the average rate of increase in other European countries. Now the average rate of increase in Zealand was found to be 16.4 per cent. in ten years, consequently the increment is as great as in England. Although the rate of mortality in Zealand is high, so is the ratio of marriages, and the ratio of births to marriages, by which means the population seems to increase faster than in some of the European states.

6. *Influence of the climate of Zealand upon strangers.*—The constitutions of the indigenous inhabitants of Zealand may

be considered in some respects as products of the soil and climate of the country in which they live. In marshy countries, the human frame seems to become, after many successive generations, adapted to the climate in such a degree as to render it a distinct variety from the rest of the species. This is obviously the case in Africa, many places of which could not be long habitable to other varieties of the species constituted very differently from that of the negro. The constitution of the indigenous inhabitants being thus modified and suited to the climate of a country, its endemic influences have comparatively little effect upon them. But when persons whose constitutions are formed by influences of a different kind migrate to a country differently circumstanced diseases may be expected to ensue. *(Copland.)*

Dr Wind, who translated into Dutch Dr Lind's Essay on preserving the health of seamen, and who practised medicine in Walcheren for many years, informs us that the Scotch regiment in the Dutch service has been known to bury their whole numbers at Sluys, in Dutch Flanders, in three years. We learn from the report of Dr Borland and his coadjutors, that, upon an examination of the sick returns of the French army for a period of seven years, it was found that at least one-third or 33 per cent. of its force was annually cut off by endemic disease. I may add, that when the English landed in Walcheren, there were only 85 men alive in a Dutch regiment, which at its arrival there three years before was 800 strong. The annual ratio of mortality in this corps must have been about 31 per cent. or rather more than double the mean ratio of mortality which occurs among troops in Jamaica. Napoleon seems to have known pretty well the real nature of the climate of the Delta of the Scheldt, and of its influence upon strangers; for in a letter to the minister at War in regard to the Walcheren expedition, he says, " we are rejoiced to see that the English have packed themselves in the morasses of Zealand. Let them be only kept in check, and the bad air and fevers peculiar to the country will soon destroy their army." The French, it is said, crowed over the expedition with the force of reason, the bitterness of sarcasm, and the playfulness of ridicule.

7. *Sickness of the Troops.*—I have already stated that endemic fever appeared among the troops on the 19th of August, or about twenty days after they landed. The following facts, which were communicated to Dr Bancroft by Mr Nixon, surgeon to a battalion of the 1st Regiment of Foot Guards, convey a graphic account of the commencement and progress of endemic fever among the men under his care. The bat-

talion in question landed on South Beveland on the 2d of August, the strength being then 872. On the 19th the endemic appeared among the men, and between that date and the 4th September, the day the corps embarked for England, comprehending a period of sixteen days, 359 men were attacked with fever. The battalion was landed at Chatham about the 7th or 8th of September. Many of the men continued to be attacked with endemic fever, so that by the 8th March 1810, only 117 of the original strength had escaped the disease in question. Some of the 117 men were attacked with intermittent fever as late as the middle of the month of June.

The long protracted period during which the pestilential poison remained latent in the constitution constituted a very remarkable feature in the endemial disease of Zealand. In numerous instances the noxious effects of the miasmata did not appear until nearly a year after the troops returned to England, when they became suddenly affected with the specific symptoms of the disease, apparently in consequence of the slight fatigue of a short march. The influence of the remote cause of intermittent fever as it exists at Seringapatam (Mysore,) is often long inoperative or latent, but I believe not in so remarkable a degree as in the climate of the Delta of the Scheldt.

8. *Statistics of Sickness or inefficiency.*—The following table is intended to show not only the absolute amount of the sickness of the army on the 10th October, but also the relative ratio of sickness among different classes of the troops.

Table IV. Showing the strength of the troops in Walcheren on the 10th October, divided into four classes, the number of each class fit for duty, and the number sick, together with the ratio of sick per 1000 of the mean strength.

Class.	*Strength.*	*Fit for duty.*	*Sick.*	*Ratio of sick per* 1000.	
Officers, .	718	552	166	231	
Sergeants, .	770	463	307	398	587
Drummers, .	343	191	152	443	
Rank and file,	14,093	5616	8477	601	

To ascertain the relative degrees of sickness which prevail among different classes of individuals exposed to the same atmosphere is a point of some importance, because it affords a guide to a means of prevention. Thus we see by the above table that the ratio of sickness is highest among the rank and file, and that it is considerably lower among the drummers and sergeants, and lowest among the commissioned officers. Sir John Pringle observed a similar circumstance in regard to the officers in Flanders in 1747,—an advantage he attributed with much probability to "good beds, dry rooms, and better diet." Sergeants and drummers are usually not much exposed to the night air, not being on sentry, which seems to be the period when the pestiferous atmosphere is most influential, and to this cause may perhaps be in a great measure attributed the comparative low ratio of sickness among these two classes. The duties of sergeants and drummers are commonly not so fatiguing as the rank and file, and hence they are in slight cases not so imperiously impelled to report themselves sick as privates.

The mean ratio of sickness among the troops, namely, 587 per 1000, is obviously extremely high, but even this ratio has been greatly exceeded in the same country; for Sir John Pringle informs us, that when four battalions of British troops, which had been employed in Zealand during the year 1747, went into winter quarters, their sick in proportion to the men fit for duty were nearly as four to one, which is equal to 800 per 1000.

9. *Abstract of the monthly returns of the Troops employed in Zealand.*

Table V. Showing the monthly strength of the British army employed in the Islands of Zealand, together with the number of sick and deaths by disease, and the monthly ratio of sickness and mortality per 1000 of the strength, for a period of nearly four months, or from the 28th July till the 24th November 1809. Compiled from materials contained in a paper in the third volume of the Medico-Chirurgical Transactions.

Date 1809.	Strength.		Total strength officers and soldiers.	Sick. Officers and soldiers.	Ratio of sick per 1000, officers & soldiers.	Deaths. Non-commissioned officers & sold.	Monthly ratio of mortal. per 1000 of N. C. officers & sold	Com. offi.	
	Non-commis. officers & soldiers.	Commiss. officers.						Deaths.	Month. ra. of mortality per 1000.
25th August,	41,642	1879	43,521	2701	62	14	0.3		
Septem.	16,931	723	17,654	8829	500	883	52.	29	40.1
October,	11,921	611	12,532	5872	468	760	63.	9	
Novem.,	6,294	452	6,749	1093	162	196	31.	3	

25th August.—During the early part of the month of August, 100 men and 7 officers died from wounds which are not included in the table. It appears by the return of this date that the ratio of sick of all ranks per 1000 was 62. As the sick of the commissioned officers are merged with the sick of the soldiers, I have not been able to state the ratio of each class separately. The ordinary ratio of sickness among soldiers in this country is about 40 per 1000.

In regard to the mortality from disease among the troops, it is extremely small, being only 14, or one in 2974. This circumstance may be attributed chiefly to a careful exclusion of infirm individuals from the troops on embarkation, and perhaps partly to the excitement occasioned by the novelties of active service.

On the 20th of August, Mr Webb, Inspector of Hospitals, made his first communication to Mr Keate, the Surgeon-General, upon the subject of the sickness of the army, by stating that from 6 to 8 men on an average of each regiment had been attacked with fever of the simple continued form.

25th September.—The return of this date shows that the ratio of sick of all ranks was 500 per 1000, and that the monthly ratio of mortality among the soldiers was 52 per 1000, and among the commissioned officers, 40.1 per 1000.

25th October.—The return during this military month shows that the ratio of sick of all ranks was 468 per 1000, which is somewhat lower than the return of September, and that the monthly ratio of mortality among the soldiers, was 63 per 1000, and among the officers, 14.7 per 1000.

25th November.—The ratio of sickness of all ranks this month is 162 per 1000, the monthly ratio of mortality among the soldiers is 31 per 1000, and among the officers, 6.6 per 1000.

The preceding monthly returns are purely military, and consequently they are imperfect, as means of communicating the medical statistics of the army. They give no account of the number taken ill during the intermediate periods, nor of those discharged from hospital, from whatever cause, whether on account of recovery, or for the purpose of being transferred to England. The return of the 25th November shows that the ratio of sick in hospital is considerably lower than that of October, but it is not obvious how this circumstance happened, whether it was occasioned by a reduction of the ratio of admissions into hospital, or from a transfer of the sick to England.

It may, however, be inferred that some abatement of the poisonous influence of the climate took place during the month of November.

10. *Transfer of Sick.*—It has been stated that the total number of sick conveyed from the Scheldt to England amounted to 12,863. The sick so transferred were accommodated as they arrived, either in regimental or general hospitals at Plymouth, Portsmouth, Deal, Harwich, Ipswich, Colchester, Norwich, and Yarmouth.

Return of the sick and convalescents which embarked from the Island of Walcheren, from the 14th September till the 31st October 1809.

Date of embarkation.	*No. of men embarked.*	*Date of embarkation.*	*No of men embarked.*
14th September .	115	13th October, .	862
15th do. .	75	21st do.	397
17th do. . .	357	22d do. .	997
18th do. . .	309	28th do. . .	171
29th do. . .	335	30th do. . .	706
29th do. . .	65	31st do. . .	781
5th October, .	623	31st do. . .	150
6th do. . .	350		
			6,292

The last shipment of sick took place about the 26th November.

General Monnet, who had commanded the French troops during the seven years they occupied Zealand, recommended to his government never to remove the sick, it being, according to his allegation, found that a greater number of those who were kept on the Island of Walcheren recovered, than of those who were removed elsewhere, so that it appeared as if a salubrious atmosphere acted in his estimation, like a poison upon the system in which the morbid action was confirmed. Fortunately his recommendation was disregarded by the medical and military authorities of the British army.

11. *General view of the mortality of the troops.*

Table VI. Showing the strength of the army (artillery excepted) which embarked for service in the Scheldt, in the month of July 1809, the number of deaths which took place between the period of embarkation and the 10th January 1810, together with the ratio of deaths per 1000 of the strength.

	Class.	*Strength.*	*Killed.*	*Died from disease on service.*	*Died since sent home.*	*Total deaths.*	*Ratio of deaths per 1000 of strength.*	
Division of the army which arrived in Eng on 7th or 8th of September.	Officers,	917	1	7	10	18	19	
	Non-com. officers.	1455		16	63	79	54	72
	Soldiers.	19522	9	243	1176	1428	73	
Troops assigned for the defence of Walcheren in the beginning of September.	Officers.	901	6	33	10	49	54	
	Non-com. officers.	1310	7	128	50	185	141	142
	Soldiers.	16574	83	1665	606	2354	142	

This table shows not only the absolute mortality which took place among the troops within a certain period, but it also shows the relative mortality which occurred in the two divisions or portions of the army, and in three different classes of individuals composing the army. Thus we learn that the ratio of mortality among the soldiers composing that portion of the army which left Zealand on the 7th September was 72 per 1000; while it was 142 in the army assigned for the defence of Walcheren.

The following table will show the total mortality which took place among the troops employed in Zealand; as also the relative mortality which occurred among the troops of the line and the artillery.

Table VII. Showing the strength of the army, including the artillery which embarked for service in the Scheldt in July 1809, the number of deaths which occurred among the officers and men from the 28th July 1809, till the 1st February 1810, being a period of about six months, together with the ratio of deaths per 1000 of the strength.

Class.		*Strength.*	*Died.*	*Ratio of deaths per* 1000.	*Ratio of deaths per cent.*
Troops of the line.	Officers,	1738	67	38.6	3.86
	Soldiers,	37481	3999	106.	10.6
Artillery.	Officers,	126	3	24	2.4
	Soldiers,	3108	213	67	6.7
Mean of both arms.	Officers.	1864	70	37	3.7
	Soldiers,	40589	4212	103	10.3

Thus we find that the ratio of mortality among the officers of the troops of the line was nearly 3.9 per cent., while it was 2.4 per cent. among the officers of the artillery. Among the soldiers of the troops of the line, the mortality was 10.6, and among the men of the artillery 6.7 per cent. The mean ratio of mortality among the officers and men of both arms from the date of embarkation to the 1st February, was among the former class 3.7 per cent., and among the latter class 10.3 per cent.

Without intending to institute a comparison between the mortality which occurred among the troops employed on the Scheldt, and that which has been found to occur among troops employed at home and in some of the dependencies and colonies of the United Kingdom, I may, however, submit a statement of the mortality of the troops in a few of these stations, for the information of readers who have not devoted much attention to military statistics.

Table VIII. Showing the annual ratio of deaths per 1000 of the mean strength of the troops employed in the following commands.

Station.	*Period of observation.*	*Ratio per* 1000.	*Ratio per* 100.
Ireland, -	32 years, from 1797 to 1828,	15	1.5
Bengal, -	9 years, from 1816 to 1824,	55	5.5
Madras, -	do. do.	56	5.6
Bombay, .	do. do.	43	4.3
Windward & Leeward Island command.	19 years, from 1810 to 1828,	113	11.3
Jamaica,	do. do.	155	15.5

None of the numerical materials to which I have had access give any account of the health and mortality of the troops after the 1st February 1810, consequently the preceding tables and observations do not refer to circumstances which occurred posterior to that date.

The following passages, respecting the sickness and mortality of the troops which had served in Zealand, I have extracted from the 17th volume of the Edinburgh Review, relate to a more extended period. "Between the 1st January and that of 1st June 1810, there were admitted into the hospitals from the corps which served in Walcheren 36,000 patients. This statement was laid before the Lords in an official return from the military hospitals."—"From facts extracted from the evidence laid before the Houses of Parliament, it appears that 2000 men died, and 10,000 caught the infection during these months, in which the ministry were debating whether or not Walcheren should be retained, and that the whole loss in lives from the expedition may be put at about 8000, and in money between two and three millions." The author of the Historical Abstract of the Transactions of 1809, in the Annual Register, asserts that the expedition cost the country twenty millions Sterling, and imposed a burden of one million of annual taxes.

The following table is intended to give a condensed view of the extent of sickness among the troops which had been employed in Zealand, as it existed on the 1st February 1810.

Table IX. Showing the aggregate strength of the corps which returned to England from the Scheldt, the number of sick on the 1st February 1810, and the ratio of sick per 1000 of the strength.

Class.		*Strength.*	*Sick.*	*Ratio of sick per 1000.*	*Aver. ratio of sickness among troops in this country.*	*No of sick per 1000 over the usual ratio.*
Troops of the line.	Officers,	1671	217	129		
	Soldiers,	33373	11296	338	40	298
Artillery.	Officers,	123	4	32		
	Soldiers,	2893	324	112	40	72

We learn by this table that the officers of the line suffered much more from the pestiferous climate of Zealand than the officers of the artillery, there being four times more sick per 1000 among the former than among the latter class of officers.

The difference in regard to the ratio of sickness among the soldiers is still greater than among the officers. Among the troops of the line the ratio of sickness is about eight times, and among the artillery nearly three times that which is usual among troops in this country.

It appears by the above table that one-third of the troops of the line were on the sick-list six weeks after Walcheren was evacuated, and we may infer that of the number of cases in hospital, a large ratio would terminate fatally. But long after this date many of the men who had apparently escaped the obnoxious influence of the climate of Walcheren were attacked, and suffered severely from the specific endemic disease, so that a very extended investigation would be required before a near approximation could be made of the consequences of the expedition to the Scheldt, in destroying the efficiency, and promoting the mortality of the British army.

It is well known that among the regiments who had been employed in Walcheren, and who served afterwards in the Peninsula, many of the men were, upon the first exposure to cold and fatigue, rendered unfit for duty, so as frequently not to leave one-third of the strength fit for service. A similar result may frequently, if not generally, be expected in all cases where troops have suffered severely from endemic fever, which commonly leaves less or more of organic disease, by which means recovery and restoration to health is often only partial and temporary.

12. *Relative mortality of different corps and regiments employed in Zealand.*

It will be observed that the following table embraces a space of time extending to 23 weeks, 4 days, and that the period the troops were on shore in Zealand was on an average about 31 or 32 days. By the table we learn also that the mean mortality of the whole corps during the 23 weeks 4 days, was 72 per 1000, and it likewise shows us that there is a great diversity of the ratio of mortality in different corps.

The ratio of mortality among the cavalry is in general low, and from an obvious cause: Except two troops of the 2d German Light Dragoons, none of the cavalry of this division of the army were landed. The transports in which they embarked were sometime in the West Scheldt, and they had reached as high as Fort Bathz, but as they did not land, they were less exposed than the infantry to marsh effluvia.

Table X. Showing the strength of the corps composing a portion of the army which embarked for service in the Scheldt on the 28th July 1809, and which returned to England about the 7th or 8th of September, together with the number who was killed or died on service, as also those who died in England previously to the 10th January 1810, and the ratio of deaths per 1000 of each corps.

Regiments.	Embarked for service.		Killed.		Died on service.		Died since being sent home.		Tot. mort. between embark. & 10th Jan.		Ratio of mort. per 1000 of non-com. officers & soldiers.
	Officers.	Non com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	
2d Dr. Gds. 6 troops.	22	523				1		1		2	4
3d Dr. Gds. 6 troops	22	550						1		1	2
12th Lt. Drs. 6 troops	24	568				2		1		3	5
2d German Lt. Dgs.	33	629				1		12		13	20
1st Foot Gds. 1 Bat.	54	1409			1	16	2	92	3	108	76
do. 3 Bat.	37	1165				5		116		121	104
2d do. 2 Fl. Co	9	259						9		9	54
3d do. 2 do.	9	258				8		22		30	116
4th Foot 1st Bat.	58	1056				3		140		143	135
4th do. 2d Bat.	39	983				7	1	61	1	68	69
8th do. 2d Bat. 2 Co.	8	210						17		17	81
9th do. 1 Bat.	44	1020				2		67		69	67
11th do. 2 Bat.	45	906			2	4		25	2	29	82
14th do. 2 Bat.	41	876	1	2		6		17	1	25	28
20th do.	49	916				3	1	81	1	84	91
28th do. 1st Bat.	30	689				4		52		56	81
42d do. 1st Bat.	39	822				6		89		95	115
43d do. 2d Bat.	36	665						80		80	120
51st do.	64	679		1	3	6		38	3	45	66
52d do. 2d Bat.	29	470				5		29		34	72
59th do. 2 Bat.	42	863				3		5		8	5
63d do. 2 Bat. 2 Co.	22	421				16	3	29	3	45	107
79th do. 1st Bat.	39	1052					1	11	1	11	10
82d do. 1st Bat.	36	1035		4		39		46		89	86
92d do. 1st Bat.	42	1041				19	1	65	1	84	81
95th do. 2 Bat.	50	1058		2		1		133		136	119
Embodied Detach.	44	851			1	102	1		2	102	120
	917	20977	1	9	7	259	10	1239	18	1507	72

The minimum ratio among the infantry is 5 per 1000 (59th Regiment,) which is about a 14th part of the mean, and the maximum is 135 per 1000, (4th Foot, 1st Battalion,) or nearly double that of the mean.

To what causes should we attribute the great difference in the ratio of mortality which took place in different regiments? The men which compose the different corps of the British army are similar in age, in constitution, and in habits of life, their food, exercise, and accommodation in this country are also similar. Did any material difference take place among the different corps in these respects in Zealand, so as in some measure to account for the difference in the ratio of mortality?

Table XI. Showing the strength of the corps composing a portion of the army which embarked for service in the Scheldt, on the 28th of July 1809, and which were assigned for the defence of the Island of Walcheren on the 4th September,

together with the numbers who were killed or died on service, as also those who died in England previously to the 10th January 1810, and the ratio of deaths per 1000 of each corps.

Regiments.	Embarked for service.		Killed.		Died on service.		Died since being sent home.		Tot. Mort. between embark. & 10th Jan.		Ratio of mort. per 1000 of non-com. officers & soldiers.
	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	Officers.	Non-com. officers & soldiers.	
9th Lt. Drs. Detach.	22	467				74		23		97	207
Waggon train do.	21	408			1	10		2	1	12	29
1st Foot 3d Bat.	51	1027	1	15	1	62		20	2	97	94
2d do.	40	888		1		67		22		90	101
5th do. 1st Bat.	44	1091	1	14	3	79	2	27	6	120	110
6th do. 1st Bat.	46	1040				175		72		247	237
23d do. 2d Bat.	22	434				109		74		183	421
26th do. 1st Bat.	45	727		2	4	100	1	8	5	110	151
32d do. 1st Bat.	37	625		6		36		10		52	83
35th do. 2d Bat.	34	797	1	5	1	46	1	37	3	88	110
36th do. 1st Bat.	48	765		4	4	115		48	4	167	218
38th do. 1st Bat.	39	873			3	130		28	3	158	181
50th do. 1st Bat.	46	927				69		22		91	98
68th do.	43	849		17	5	103		40	5	160	188
71st do. 1st Bat.	42	1024	2	8	1	57	2	9	5	74	72
76th do.	48	798		3	1	57		34	1	94	117
77th do.	33	599			4	54		8	4	62	103
81st do. 2d Bat.	39	716		3		153		58		214	297
84th do. 2d Bat.	44	840		2		58	1	40	1	100	119
85th do.	46	630		3	3	62	1	34	4	99	157
91st do. 1st Bat.	41	695		0	1	82	1	25	2	107	153
Staff Corp Detach.	6	138				9		4		13	94
1st German Lt. Bat.	62	811		4		37		7		48	59
2d do. do.	32	715	1	3	1	49	1	4	3	56	78
	901	17884	6	90	33	1793	10	656	49	2539	142

This table, like the preceding, embraces a space of time extending to twenty-three weeks four days; but as the troops were assigned for the defence of Walcheren, it is presumed those men who were not transferred sick remained on the island until the 23d December, when Walcheren was evacuated, which comprehends a period of twenty-one weeks. From the great number of sick transferred from Walcheren it may be inferred, that a very small number only of this portion of the army served in Zealand until the 23d December, or for the whole twenty-one weeks. The original force assigned for the defence of Walcheren amounted to from 17 to 18,000 officers and men, which number had been reduced to 6749 by the 25th November.

The mean mortality of this branch of the army is 142 per 1000, or about double that of the mortality of the division of the army which embarked for England on the 4th September.

The difference of the ratio of the mortality among the different corps of this division of the army is not so remarkable as in the other. If we set aside the Waggon Train Detachment, we shall find that the minimum is 59 per 1000, (1st German Light Battalion,) which is considerably less than one-third of the mean, and the maximum 421, (2d Battalion 23d Regiment,) which is about three times that of the mean.

The 9th Light Dragoons, 6th, 23d, 36th, and 81st Regiments seem to have suffered severely,—indeed, considerably more than many of the other corps. I may here repeat the question, what can have been the causes why some corps on the same service, and exposed to the same climate, suffered so much more than others did?

13. *Intensity of Disease or proportion of Deaths to the number treated.*—The only information I have been able to collect on this subject is contained in the following extract, from a work on the Pestilential Disorders of Andalusia, &c. by Sir James Fellows.

Table XII. Showing the number of cases of disease admitted from corps employed in the Scheldt into the General and Regimental Hospitals in the eastern district, the number of deaths to the 1st February, and the ratio of deaths to the number of admissions.

General Hospitals.		*Admitted.*	*Died.*	*Ratio of Deaths to Sick.*
1st class or worst cases	Harwich -	1410	269	1 in 5
	Yarmouth -	457	58	1 8 nearly
2d class.	Ipswich -	2437	188	1 12½
	Norwich -	101	10	1 10
3d class.	Colchester -	1441	37	1 39
	Woodbridge -	859	41	1 21
		6705	603	1 11
Regimental Hospitals, -		10831	311	1 35
		17536	914	1 19

The number of admissions include relapses and patients transferred from the different hospitals.

On the 1st February the number of patients in the various hospitals in the eastern district amounted to 2327.

14. *Desiderata.*—In the month of July 1810, Dr James Clark of Nottingham pointed out the great national advantage which might result if the medical officers who were employed with the troops in Zealand would present the public with information on the following interesting points of inquiry, (Edinburgh Medical Journal, Vol. vi.)

"*1st.* Topographical accounts of the different situations which the troops occupied in Zealand, and in what manner they were accommodated.

"*2d.* History of the disease at each of these stations, arranged as much as possible upon a similar plan, to afford a facility of comparison.

"*3d.* The causes producing the disease, whether referable to one or many combined, whether the body was predisposed by previous hardships, or by irregularities of diet, want of clothing, &c.

"*4th.* Did one station induce the intermittent, and another the remittent?

"*5th.* What methods of treatment were pursued at each station, the result attending each, and the general result of the whole?

"*6th.* What prophylactic measures were adopted?"

Hitherto, so far as I know, Dr Clark's call has not been responded to, although there must have been from 240 to 250 medical officers employed in Zealand; but it is hoped a comprehensive account of the health concerns of the expedition may yet appear.

In addition to Dr Clark's scheme, I would suggest that a numerical or statistical history of the armament should be compiled. It is presumed that there is abundance of materials for that purpose in the public offices. A comprehensive statistical enumeration of the actual state of the health of an army, and the extent to which it is deteriorated under different circumstances, is a highly important element for the acquisition of both political and professional knowledge. It seems therefore to be the incumbent duty of government, to make a proper use of the military statistical materials which have been collected, and which are daily accumulating, so as to draw from the calamities of war, or the wide spreading pestilence of unhealthy colonies, or stations, some benefit to mankind in general, and to the army in particular. Such a measure would have a beneficial influence in showing the connection between diseases and their natural causes, and eventually it would contribute greatly to direct us to the best means of promoting the welfare, improving the efficiency, and preserving the health of soldiers.

The preceding tables are submitted to the medical profession simply as statistical facts,—materials for thinking. It did not come within the writer's plan to deduce the important pathological and practical conclusions which they are obviously calculated to excite. He is well aware that his data were limited and defective; but as he had access to no better, it has been his wish to make the best use he could of those he had in his possession;

and if his paper should serve as a specimen of what may be done in this way, and excite others who have better opportunities for prosecuting military medical statistical investigations than he has, to improve their opportunities, his object will be effectually gained.

It may not be generally known to the readers of this Journal that the compilation of the statistics of the British army, at home and abroad, for a period of about twenty years, has been for some time in progress. In the month of October 1835, the author of this contribution, and Lieutenant Tulloch, 45th Regiment, who had previously been engaged in statistical pursuits, were appointed to examine the public documents in the Record-room of the Medical Department, and in the War Office, for the purpose of ascertaining the extent of the sickness and mortality of the troops, together with the prevailing diseases among the men in each military command. The statistics of the troops in the following commands are nearly ready, namely, Jamaica, Windward and Leeward Islands, West Coast of Africa, Cape of Good Hope, Mauritius, Malta, and Gibraltar. Lord Howick, the Secretary of War, has with great liberality sanctioned the publication of the reports already finished, so that by the beginning of the year 1838 a part of the work may be before the public.

The topography and statistics of the different colonies and dependencies to which troops are sent should form part of the education and study of every military man, whatever be his rank and duties. This branch of information obviously comprehends the elements of the condition of a country, natural and artificial, particularly physical geography, climate, soil, &c. &c., together with an account of the health of the indigenous inhabitants, and of the troops employed in a settlement, &c. In the military service, the ravages made by malaria have been dreadful, and in some commands and localities the loss of human life is still great. Sometimes these effects may have been inevitable, while on other occasions they seem to have been the result of neglect, inattention, or ignorance, which could not always be easily excused. We dread, and justly dread, the influence of epidemics, such as the plague and cholera, while we submit with an apparent indifference to the perennial consequences of malaria in unhealthy localities, without always duly inquiring whether the remote cause of a high ratio of sickness and mortality among troops might not be obviated. We endure what is expected; but when it is once shown that great sickness is not fated or unavoidable, much may commonly be done to prevent it. Never perhaps did ignorance lead to such grievous and humiliating results as have followed inattention to the means of preserving the health of armies. When the French army attempted to take possession of Naples in 1528, they were reduced within a few days from 28,000 to 4000, in consequence of choosing an injudicious encampment at Baiæ. A talented writer in an article on military education, inserted in the Edinburgh Review, (Vol. xlix. page 113,) expresses himself strongly in regard to the expedition to the Scheldt. His words are, "*The expedition to Walcheren, planned and conducted as it was, was the fruit of statistical ignorance in every one,—everywhere from the prime minister to the commander-in-chief, and from him to the surgeon's mate. That ignorance which every Middleburghian, any Dutchman could have enlightened or dispelled, cost us ten thousand brave men, not a little money, and not a little credit, and not a few tears and inconveniences to those whom statesmen never consider.*"

Edinburgh, September 1837.

ART. III.—*Suggestions for establishing Convalescents' Retreats on the Sea Coast, as subservient to the Hospitals and other Medical Charities of large towns.* By JOHN ROBERTON, one of the Surgeons to the Manchester Lying-in Hospital.

A NUMBER of years ago I printed a pamphlet "on the Health of English Manufacturers," designed chiefly for local and private circulation, containing my sentiments concerning Convalescents' Retreats. The project was very favourably entertained, as far as the expression of opinion went,—all readily admitting that no scheme could be devised more likely to benefit the sick poor, to lighten the expenses of our dispensaries, as well as to lessen the numbers of miserable patients on their lists, to say nothing of the relief which would accrue to the payers of poor's rates; but no steps have hitherto been taken for carrying it *into effect*. This, I am aware, has been my own fault; for having neither leisure, nor a practical turn for making an experiment of this nature, I was content to *devise*, leaving the execution of my scheme to others possessed of more energy, practical talents, and benevolence. As the "Suggestions" will receive, in your Journal, extensive circulation, both in this country, on the continent, and in America, I cannot but hope that they will be taken up in more than one quarter, and acted upon with perhaps modifications and important improvements.

Health is that condition of body in which the organic and animal functions are performed with a feeling of satisfaction. Deviations from this state, speaking generally, indicate the presence of disease. When the deviation is slight there may be only some uneasiness experienced. But when it is such as to affect the whole or several of those functions, the feeling of satisfaction is lost, and positive uneasiness, varying in degree according to circumstances, is the consequence. As exceptions to this definition, it is true that certain affections of the skin, many kinds of tumours, and even some incipient diseases of internal organs, do not perceptibly affect the health. The functions of certain organs too, may be so slightly and transiently deranged, that the effects shall not deserve the name of disease. But no definition can be given of health altogether unexceptionable: The foregoing is sufficiently precise for my purpose.

The duration of life among barbarians is certainly lower than in Europe,—a fact much insisted upon by political economists as illustrative of the benefits flowing from civilization. Perhaps the rate of mortality in their case is even as great as 1 in 30 annually, while with us, it is 1 in 58. What renders it so great is the question, Is it because they are individually feeble and sickly? According to all the evidence we possess, clearly not. It is not because they are liable to numerous diseases, or that they are unhealthy, but chiefly from the following causes; *first*, their entire ignorance of the laws of epidemic and contagious diseases, and likewise of the science of medicine; *secondly*, occasional famines, which in every state of society powerfully predispose to epidemic influence; *thirdly*, war, which they are almost constantly waging, and which proves incredibly fatal, especially to the males; and *lastly*, the great waste of life from abortion, infanticide, and infantile mortality.

In order to draw a comparison between the health of Englishmen—I should rather say of English artisans and their families, for it is to this class I chiefly refer,—and that of barbarians, the fairest method, could we obtain the necessary data, would be to take the average duration of life in each; suppose for the former at fifty years, that is 17,250 days; and for the latter at thirty years, which is 10,950 days; and to estimate the average number of days passed by each from birth to death in a state of health. Not possessing a sufficient number of facts to support an inference we are forced to rely on conjecture; and with some probability on my side I conjecture that, were the comparison made, it would be found that the Englishman's life, although much the longer, includes a far greater number of days passed in disease than the life of the barbarian.

To savages death comes generally as a stroke in the form of war or pestilence. Fluxes and fevers are often so fatal that in a short time powerful tribes are almost completely exterminated. But very few are subject to chronic maladies, on which account their habit of body is good. Grievous wounds, that under surgery so rude as theirs would quickly kill an European, seldom prove fatal; a remarkable peculiarity, which made the great historian of savage life, Dobrizhoffer, exclaim that it was scarcely possible to kill an Abipone. "I have often," says the good Jesuit, "beheld many of them wounded with various kinds of weapons, their side pierced, their bones and ribs broken, their breath drawn with difficulty, the blood streaming from their numerous wounds,—themselves, in short, the breathing images of death. When in a few weeks I saw these very Abipones riding or drinking in full health, I could attribute it only to the strength of their constitutions.*

Among savages who inhabit salubrious countries the hair and teeth are retained to an advanced age. Travellers who judge only by the physiognomy of the Indians, Humboldt informs us, are tempted to believe that it is rare to see old men among them, which is a mistake, as the head never becomes gray, and they are very little subject to wrinkles. The same is asserted by Mr James, of the Omawhaws, an Indian race, as yet little removed from their primitive condition. Baldness, he says, appears to be unknown, the hair being always retained, however advanced the age, and decayed teeth are rare.†

It is customary, in the present day, to represent savages as possessing much less physical strength than Europeans; and Peron's experiments with his dynamometre are triumphantly adduced as decisive of this question. Doubtless such half-starved savages as the New Hollanders are comparatively feeble; and, in this respect, differ probably as much from their neighbours, the New Zealanders, as from Europeans. But in estimating degrees of strength by such feats as the lifting of heavy weights, we ought to remember that barbarians, when matched with Europeans in contests of this kind, are by no means susceptible of equal emulation with the latter. In order to judge of the vigour of a savage we must see him at his own congenial pursuits. Probably no European could travel farther, without intermission, than an American Indian, or row a canoe longer against the stream, provided there were an object in view, in its nature, calculated to stimulate his energy. By practice savages attain that rigidity of muscle (and only by practice it is to be attained) which enables them to equal the feats of European strength. The great muscular power of the Indian miners is well ascertained. When our Cornish men a few years since were taken to work the Mexican mines, they expressed the utmost astonishment at the enormous burdens the Indians were in the habit of carrying.* Humboldt, speaking of these miners, says, " they will remain continually loaded, for six hours, with a weight of from 250 to 350 pounds, and constantly exposed to a very high temperature, ascending eight or ten times successively, without intermission, stairs of eighteen hundred steps." Their food is dried beef and water.† Upon the whole, it seems fair to conclude, that the ruder tribes of mankind, in compensation for the want of intellectual happiness, the refined enjoyments, and the numberless conveniences of civilization, possess a considerable and almost uniform degree of animal vigour; and that, though the duration of life is shorter than it is in Europe, a much smaller portion of their existence is passed in bodily suffering than is the lot of those who compose our great manufacturing communities.

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* Dobrizhoffer. Vol. ii. page 36. See also Collins's New South Wales, Vol. i. page 444, where facts of an almost incredible kind, illustrative of the unirritable constitutions of the New Hollanders, and their power of recovery from the severest wounds, are furnished by the eminent writer from personal observation.

† Expedition to the Rocky Mountains, Vol. i. page 238. Humboldt's Political Essay on New Spain, Vol. i. pages 151 and 256.

The hitherto increasing duration of life in England is no disproof of this opinion. It is to be accounted for by, among other causes, the extraordinary improvements which have taken place in medicine and all its collateral branches within the last eighty years,—by the gratuitous medical aid now almost universally afforded to our poor, which places them, in this most important particular, on a level with the rich; and, not least, by the increase which has taken place in the means of subsistence,—a circumstance greatly favourable to the rearing of healthy children. Indeed, it is probable that the difference in regard to the duration of life in this country, and among barbarians, is owing chiefly to the far greater chance of life in infancy with us than with them.

The number of public dispensaries in Manchester, and still more, the amount of patients entered on their registers, demonstrates how high a proportion of our population is annually on the sick-list. The number of inhabitants is probably about 270,000, and, on the average of the three last years, the home and out-patients admitted at the five general dispensaries amounted annually to 24,281.† This was independent of patients admitted at the Eye Institution, the Children's Dispensary, and the Lock-Hospital; of the in-patients of the infirmary and fever-wards; of the great multitude of sick connected with the Lying-in-charity; and the numerous poor attended as out-patients by the medical officers of the Manchester and Salford workhouses; amounting, in all, at least, to 12,000 more. If to this sum we were further to add the incomparably greater amount of all ranks visited or advised as private patients by the whole body (not a small one) of professional men, those prescribed for by the chemists and druggists scarcely of inferior pretension, and by herb doctors and quacks; those who habitually swallow patent medicines; and, lastly, the subjects of that ever-flourishing branch, domestic medicine, we should be compelled to admit that not fewer perhaps than three-fourths of the inhabitants of Manchester annually are, or fancy that they are, under the necessity of submitting to medical treatment.

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* See Captain (now Sir Francis) Head's Rough Notes.

† Political Essay, Vol. i. page 125.

‡ I refer to the years 1834, 1835, and 1836; and the five dispensaries are—that belonging to the infirmary, the Ancoats, the Chorlton-upon-Medlock, the Salford and Pendleton, and the Hulme. The above annual number of patients includes those admitted for " accidents."

I have defined health as that condition of the body in which the organic and animal functions are performed with a feeling of satisfaction. By the organic functions I mean digestion, assimilation, the expulsion of the feces, &c. functions with which the mind has only an obscure connection; and, by the animal functions, I mean the use of the senses, as taste and smell, the employment of the limbs and other voluntary parts, and the ordinary exercise of the mind, as in remembering, contriving, and the like.

Whoever has attentively studied his own feelings and the indications of health and disease in others, will, I venture to think, acknowledge the importance and comprehensiveness of this definition. In a state of health we anticipate our meals, and eat our food with a degree of pleasure, the senses, at least those of taste and smell, being meanwhile gratified; and, when the repast is finished, there follows a feeling of comfort, of renewed strength, and a disposition to cheerfulness. In health, walking, and an infinite variety of exercises of the voluntary powers, are all performed with more or less of a feeling of satisfaction. The mind, too, is employed with like agreeable facility; we are cheerful, we pursue our ordinary avocations with clearness of perception, (according to our natural measure of intellect,) and our tempers and affections are excited by fit objects and on proper occasions; allowing, of course, for difference in temperament and disposition. Again, when a sense of fatigue succeeds exercise we sit, or we recline, or we solicit sleep, still with the same feeling of satisfaction.

When disease takes place, even although it be in its nature slight, the change in the feelings is remarkable. Let it be only a trifling cold, a fit of indigestion, rheumatic pains, sick-headach, or disordered bowels, it will be found that the feeling of satisfaction, which attends the healthful performance of the animal and organic functions, is diminished, if not entirely lost; and that discomfort succeeds. The meal is not anticipated with the same pleasure; the food loses some of its wonted relish; and, when the meal is over, the feeling of discomfort is, upon the whole, increased. In place of cheerfulness there is silence or moroseness, there is inaptitude for bodily exercise, and yet restlessness in repose. The mind also is languid, and only to be called into activity by vigorous effort or by some powerful motive, the temper is disturbed or wayward, and the domestic affections are generally torpid.

If this be correct as a general statement of the effects of even the slighter class of indispositions, as occurring in the middle ranks of life, where ordinarily every kind of alleviation is to be obtained, it will apply with very different force to the manufacturing poor; and if it be true (as who will take upon him to deny?) that these are the frequent subjects of every known variety of chronic malady, the foregoing definition of health will enable us to perceive how very often the health of the poor must be invaded, and how little reason we have to boast of the increasing healthiness (to longevity I make no allusion,) of English manufacturers.

Undoubtedly the hardest part of the operative's lot consists in his being so very liable to disease, without, at the same time, possessing the power of relaxing from his labour. Day after day the mule or the loom moves the accustomed number of hours, and the full amount of work must be done. There is not, and in the present state of things, there cannot be two grades of labour,—one for the whole, and another for the sick. The consequence is, that indisposition in hundreds of instances, which at the beginning might soon have been removed by repose and relaxation, becomes, owing solely to the want of these, confirmed, and more and more inveterate; till the stock of vigour is entirely exhausted, and the health ruined; or in such a state as to require months for its re-establishment,—an alternative fraught with the utmost pecuniary difficulty in many cases, and the want of proper cordials, nourishment, and the requisite change of air, in nearly all.

If it be contended that these hardships are not peculiar to our manufacturers, I reply that, although it is true that they are not peculiar to them, yet such hardships press upon them incomparably more than upon those who labour at less exhausting and more healthful employments, and who live in circumstances more favourable to morals. These are the reasons which have led me to this conclusion:—I view it as a misfortune for an operative's family to have become resident in a densely peopled community, like Manchester, where the working-class are, numerically, to the upper classes living within the limits of the town, at least ten to one; where are large districts in which, besides the publican and the small shop-keeper, operatives compose the entire population,—in which there is hardly an individual (possibly not one!) to whose superior habits and manners the poor can look up as to a proper example, or upon whose more enlightened advice and sympathy they can depend in their various domestic exigencies; advice and sympathy such as, in a differently arranged and more happily mixed community, the better sort are accustomed to extend to their indigent neighbours.

Having spoken of the sickliness of the operative poor in a large town, and of the great extent of medical aid afforded by charities, I now offer a few suggestions in reference to a description of means, supplemental to medicine, calculated eminently to benefit when the administration of medicines has ceased to confer relief.

For many years it has appeared to me that a considerable number of the patients who apply at our public charities are in a condition to derive little, and sometimes no benefit whatever from the most skilful medical treatment. They are suffering under some form of chronic disease, which in its nature may, or may not, be curable. While under treatment poverty compels the continued pursuit of their ordinary avocations; their residence in, perhaps, a majority of instances is a cellar, and their food is the same as before, or becomes of a worse quality, owing to their being less able to earn a living. In other words, the patient remains in precisely the same circumstances as those in which he was immersed when he fell sick, saving that few who are ill can prevent their condition from growing gradually worse. It is hardly necessary to remark, that this sort of patients is in want of something besides medicine. They are in want of such a change in external condition as shall remove them from under the influence of those depressing circumstances which, if not the sole causes of their complaints, tend to aggravate and increase them; and which, supposing their continuance, must hinder speedy or even ultimate recovery.

Without in the slightest degree underrating the importance and value of the Materia Medica, when skilfully employed for the cure of disease, I cannot conceal from myself the fact, that medicine, in a variety of cases, comes merely in aid of other means, and deservedly ranks as secondary and inferior to these. A man (I choose a familiar illustration) of delicate constitution, of sedentary occupation, residing in a confined situation, and who has to provide for a large family, becomes affected with chronic indigestion. Anxiety, unsuitable diet, unremitting labour, combined with the want of even the occasional enjoyment of a pure atmosphere, aggravate the disease. He is admitted on the lists of a dispensary. His sallow desponding countenance speedily reveals the nature of his malady. He is forthwith put under treatment. For a time he appears to be obtaining relief. The alterative perhaps corrects the vitiated state of the excretions, the prussic acid or the strychnia eases the pain of the stomach ; but these signs of amendment are of short continuance. After a few weeks they have vanished. The medicines are now varied, and new hope is held out, but " the bloom of hope" is gone. The patient returns to his last, his needle, or his loom ; and, not less, to his cares, his long hours, his close confinement, and vegetable diet ; and, in due time, his name appears on the dispensary register as one of the " irregular,"—an appellation which has the merit of saving the credit of the physician, by throwing the blame of failure on the patient. In this case it will surely be admitted that something besides medicine is wanted.

In illustrating this most important point, I shall confine my remarks to a class of patients with whose diseases and personal circumstances I have now for a great number of years been familiar ; I mean the patients of the Manchester Lying-in Charity. The following is a case which is far from uncommon. The mother of a family suffers a miscarriage, attended with hemorrhage, which leaves her in a state of abject weakness ; a prey to a train of nervous symptoms. What is the fate of this poor woman ? She attends her surgeon, week after week, with a straw-coloured, melancholy visage ; a hurried circulation, headach, feeble digestion, swelled ancles, and other indications of debility. The surgeon does his best ; but he knows that his patient, notwithstanding her weakness, has daily to undergo the drudgery of doing, single-handed, the domestic and other duties required, for her family ; that her residence is a cellar, or some other equally unpropitious dwelling, in a confined situation ; that her diet, which ought to be better than common, is the ordinary diet of a poor family, and altogether unsuited to the sickly appetite of such an invalid. After long-continued, persevering, but fruitless attempts to benefit his patient, the surgeon is, perhaps, fortunate enough to obtain for her a Southport charity-ticket, with which she is immediately despatched to the watering place of that name, for the limited term of three weeks. Here a total change in her circumstances takes place. She breathes a pure bracing atmosphere, has clean airy lodgings, plenty of wholesome food, and no other duties to perform than those arising from the care of her person, and her daily walks. And what, generally speaking, is the consequence? Her appetite and spirits return, begin to return, perhaps, the very day she arrives; and when, on the expiration of her term, she returns to her surgeon, he finds her perfectly or nearly recovered, and cannot fail to perceive—is forced to admit that, in chronic diseases, coupled with the already-mentioned adverse circumstances of a personal kind, a temporary change of condition, such as this removal produces, has incomparably more influence in the restoration of health than the most skilful medical treatment in thrice the time, without it. *

This is one example. I will give another of still more frequent occurrence. A weakly woman, after a lingering confinement in child-bed, exposed to constant toil in the discharge of her domestic duties, and, probably, on scanty fare, has felt it her duty to suckle a vigorous infant for ten, twelve, or fifteen months. The train of symptoms following this practice under such circumstances is extremely distressing; the digestive organs are seriously impaired, there is paleness of countenance, headach, giddiness, and singing in the ears; distressing flatulence; a capricious and feeble appetite; irregularity in the alvine functions; a frequent sense of faintness; severe pains across the loins; general muscular debility, particularly of the lower extremities; irritability of temper, and mental despondency. In such a case what can medicine effect without other means? Absolutely little or nothing. I may venture to assert that the scientific practitioner has the least reliance, in such cases, on the unaided powers of the *materia medica*. Without neglecting medicine he has recourse to other helps. They are the ignorant only, who appeal under all circumstances to the laboratory.

It is no part of my object to describe the various forms of disease, occurring in dispensary practice, which require, in the subjects of them, a change of personal condition. It will suffice that I specify three classes of patients. In two of these such a change is desirable rather than indispensable. The first class consists of convalescents from acute diseases, in whom delicacy of constitution, together with poverty, retards recovery; and the second, of those affected with chronic diseases, in their nature curable, but whose cure is prevented by personal circumstances. The third class is undoubtedly the most important: it is made up of those whose complaints are, in their nature, curable under favourable management; but which are to be reckoned nearly incurable without that temporary change of condition that I have already described. In this class are many affected with diseases peculiar to females, and those who, in the puerperal state, have failed to regain their strength; also children the subjects of marasmus and of various other cachectic diseases.

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* Having at different times sent a considerable number of poor women, from among our lying-in hospital patients, to the sea-coast, I am able to speak from experience as to the benefits almost uniformly derived from such a change, by this extensive class of sufferers—a class entitled to our deepest sympathy—both on the ground of their own worthiness, and of the slavish toilsome life they are compelled, almost without exception, to lead from the day of marriage till death gives them rest.

In the surgical practice of hospitals every intelligent surgeon will admit, that after important operations, as well as in certain other cases, the removal of the patients into country air is often strongly indicated. When the wounds become indolent, or assume an unhealthy appearance, change of air will sometimes in a few days work remarkable improvement. Here it is change of air solely that is indicated; as it may be presumed that within the walls of an hospital the want of fresh air is the only privation experienced. I am desirous, however, that the reader should understand that I do not plead, with reference to those three classes of patients which I have enumerated, for change of air merely. That benefit without other concomitants would do little. Along with change of air they need other changes also, a change from a meager to a plentiful diet, from filthy and stifling dwellings, to others clean and well-aired; from the cares and duties of home to complete relaxation of both body and mind; and from in-door confinement to unshackled agreeable exercise.

These remarks will prepare the reader to listen while I sketch the outline of an institution, which I cannot but hope, the humanity of the public will sometime or other establish, not in one district only, but in many quarters of this densely peopled country. I mean a retreat for convalescents.

For many years there has existed a stranger's bathing charity at Southport, supported by public subscription. Although limited in its pecuniary means, and supplying very inferior accommodation in respect to lodging, this charity affords relief annually to a number of poor who resort thither, affected with scrofula and other complaints supposed to be peculiarly benefited by sea-bathing and sea-air. But, out of the vast population of Manchester, probably not more than between two and three hundred persons annually, obtain its aid; and of these many are not of the poorest sort. Such an institution, therefore, highly useful though it undoubtedly is, differs from that which I propose to have established as subservient to the medical charities of large towns, and a brief prospectus of which I respectfully submit to the public, and more especially to the candid consideration of my professional readers. I merely venture the sketch of a plan, assured, that, should the principle of my proposal be favourably received, there will be no difficulty in filling up the outline.*

Firstly, Retreats for convalescents to be erected in salubrious and otherwise eligible situations, at a distance from any town; and if possible on the sea coast, for the reception of such patients of our medical charities as the committees of those charities may recommend as fit objects.

Secondly, A retreat in all cases to consist of a commodious building, placed under the superintendence of a responsible married couple, as governor and matron.

Thirdly, The expenditure of the retreat, (I am assuming that the buildings, &c. have been erected by public contributions,) to be sustained by annual subscriptions chiefly, not omitting other means of income; the number of convalescents admitted annually to maintain a strict relation to the income of the current year, whatever that may be.

Fourthly, The retreat to be open for the reception of patients during seven months of the year, namely, from the 1st of April to the 31st of October.

Fifthly, A regularly qualified apothecary resident in the neighbourhood to be attached to the retreat, whose chief duty it should be to prevent the intrusion of any other objects besides convalescents.

From facts I am warranted in assuming that a clear income of L. 1200 per annum would allow of at least 1000 adult patients, spending each three weeks at a retreat, in the enjoyment of plain wholesome diet. And further, that, for the accommodation of this number, about 100 beds would be required, with half a dozen spare beds, separate from the rest, in case of accidental sickness; it being understood that no persons labouring under active forms of disease should on any account find admission.

From this outline the reader will form some idea of the nature of the institution which it is my object to recommend. It has been suggested to me that such a retreat ought to be within six or eight miles of the town to which it belongs, rather than farther off: but there are many reasons why it should not be within a short distance, and why it ought to be on the sea coast. In the first place, it would require (supposing the town to be inland, and this I am all along supposing,) the expensive purchase of a large space of ground, in order to secure to the convalescents sufficient room for exercise; whereas, on the sea coast, there is (with the most perfect change of air, and, what is of importance to people from inland parts, complete novelty of scene,) unbounded range without risk of trespassing on private property. In the next place, it is essential, in such an institution, that it be quite removed from the intrusion and frequent visits of the relations and friends of the convalescents; and this could only be secured by distance. It is, moreover, to be observed that such is the facility and cheapness of transit from this, and all the surrounding towns, to the more accessible parts of the Lancashire coast—a distance varying from about thirty to fifty miles; that the expense of passing to and from the retreat, if thus situated, would be trifling; while the mere travelling is, of itself, exhilarating and beneficial. *

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* In Howard's account of his inspection of the Hotel Dieu at Lyons, in 1775, allusion is made to two large upper rooms, airy and pleasant, named "Chambres de Convalescence." He says, "to these they remove patients that are recovering, and those whom I saw there said they were very refreshing. They came down from them at meals to a refectory or hall. These rooms soon complete the patient's recovery." In a note, he mentions something similar as having been proposed by Mr Aikin of Warrington, in his "Thoughts on Hospitals." On the state of the Prisons in England and Wales, &c. &c., by John Howard Esq., 4to, p. 96.

In drawing public attention to the necessity which exists for establishing convalescents' retreats subservient to the medical charities of large towns, I may be allowed to remind the more affluent classes that there has long been a great number of retreats appropriated for their sole use and benefit. They will not fail to recollect that the whole line of English coast is thickly studded with watering-places, which have been called into existence for their accommodation; to say nothing of such inland haunts of the wealthy invalid as Bath, Cheltenham, Buxton, &c., where thousands resort annually, in the twofold pursuit of amusement and health. If then the opulent have, long since, discovered that a convalescents' retreat is good for them, will any venture to say that it is not equally good, and infinitely more necessary, for the feeble and disabled of our manufacturing population, to whom poverty renders lingering sickness in every instance a heavy, and often an irretrievable calamity?

ART. IV.—*Official Report on the Radesyge and Venereal Cases in the Swedish Hospitals.* By C. E. VON WEIGEL, ER. AF EDHOLM, A. J. HAGSTRÖMER, JÖRAN ROOTH, C. TRAFVENFELD, and CHR. CURLANDER.

Table I. Upon the patients affected with the venereal disease and syphiloid distemper, (syphiloid, radesyge,) admitted into the Stockholm Land Hospital, from 1813 to 1820.

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* Although my remarks have reference to my own locality, it is not needful the reader should so restrict their application.

Year.	No. admitted.	Ascertained mode of infection.		Unknown mode of infection.	Mercurial treatment used bef. admission	Employed in the hospital.		
		Concubitus.	General intercourse.			Mercur treat.	Fumigation.	Dietet. method
1813,	223	14	16	193	35	9	0	214
1814,	163	9	23	131	27	7	0	156
1815,	38	2	3	33	7	0	0	38
1816,	64	7	19	38	11	1	7	56
1817,	99	7	12	80	15	0	10	89
1818,	117	13	42	62	9	2	4	111
1819,	118	22	32	64	12	0	0	118
1820,	88	9	32	47	5	0	2	86
	910	83	179	648	121	19	23	868
			262				910	
			910					

II. Tabular statement of similar patients in the Infirmary of the city of Stockholm, from 1813 to 1820.

Year.	No. admitted.	Ascertained mode of infection.		Unascertained mode of infection.	Mercurial treatment used bef. admission	Treatment employed in infirmary.		
		Concubitus.	Intercourse.			Mercurial.	Fumigation.	Dietetic.
1814,	63	21	12	30	34	1		62
1815,	81	18	10	53	32	4	5	
1816,	88	29	13	46	24	6	2	
1817,	105	34	22	49	32	5	15	86
1818,	88	35	11	42	30	1	7	80
1819,	132	74	37	21	37	—		132
1820,	108	47	10	51	19	1	1	106
	665	258	115	292	208	18	29	618
		373						
			665				665	

Table III. Exhibiting a view of the symptoms with which the Venereal Disease and the Radesyge (Salzfluss) appeared in the patients admitted into the Country Infirmary.

	1813	1814	1815	1816	1817	1818	1819	1820	Tot.
1. Eruption; spots, .	19	20	0	8	11	15	6	5	84
2. Ulcers in the throat, mouth, and nose, . .	67	56	26	34	43	49	47	51	373
3. Ulcers on the body, .	143	88	20	23	54	39	50	37	664
4. Nodes, osteo-copal pains, and caries, . . .	89	49	17	19	42	20	24	16	276
5. Contractions of the joints,	4	3	0	0	1	0	0	0	8
6. Discharge from sexual organs,	2	0	1	0	0	2	9	5	19
7. Ulcers on the genitals,	3	2	0	1	1	2	10	3	22
8. Condylomata, .	8	12	1	13	9	26	22	18	108
9. Buboes, . . .	2	0	0	0	0	0	4	1	7
10. Phimosis and Paraphimosis,	1	1	0	0	1	1	1	3	7
11. Venereal testicle, .	0	0	0	0	0	2	2	0	5

Table IV. Exhibiting a view of the symptoms of similar cases treated in the Infirmary of Stockholm, from 1814 to 1820.

	1814	1815	1816	1817	1818	1819	1820	Total
1. Eruptions; spots, .	9	18	13	20	11	18	10	99
2. Ulcers in the mouth, throat, and nose, . .	20	21	36	30	31	49	32	210
3. Ulcers in the body, &c. .	38	50	40	38	36	58	45	303
4. Nodes, osteo-copal pains, and caries, . . .	34	39	43	48	32	41	22	259
5. Contractions of the joints, .	0	0	0	0	0	2	1	3
6. Discharge from sexual organs,	2	0	4	5	8	23	20	62
7. Ulcers on the sexual parts,	4	2	4	10	6	23	20	69
8. Condylomata, . .	5	8	9	16	14	31	17	100
9. Buboes, . . .	2	2	4	2	3	7	7	27
10. Phimosis and Paraphimosis,	0	0	0	0	2	10	4	16
11. Venereal testicle, . .	0	1	0	0	0	0	1	2

Table V. Presenting a view of the persons admitted into the Country Infirmary afflicted with venereal disease and radesgye [Salzfluss,] on whose state at the close of the year 1819 Reports were made.

State at the close of 1819.

Year.	No. of those admitted.	Cured.			Uncured.			Dead.		
		Those in whom mercury was not used.	Those in whom mer. was used.	Fumigation used.	Those in whom mercury was not used.	Those in whom mer. was used.	Fumigation used.	Those in whom mer. was used.	Those in whom mercury was not used.	Fumigation used.
1813	162	106	11	0	6	6	0	26	7	0
1814	119	68	21	0	4	1	0	18	7	0
1815	24	17	4	0	3	0	0	0	0	0
1816	47	28	6	5	3	1	0	4	0	0
1817	60	40	8	3	2	0	0	4	1	2
1818	71	62	3	2	2	6	0	2	0	0
	483	321	63	10	20	8	0	54	15	2
			384		28				71	
					Total, 483					

Circular Letter of the Royal College of Health to the Physicians attached to the Military Hospitals, Lazarettoes, and Infirmaries in the Kingdom of Sweden, communicating the results of the Report made in consequence of the Circular Letter of the College, of the 2d December 1822, which relate to the patients treated in the Institutions specified, in the year 1824, afflicted with Venereal Diseases and Radesyge, compared with the results furnished by 1822 and 1823.

FIRST DIVISION.	1822	1823	1824	1825	1826	Aver.
Military Hospitals.						
1. General Garrison Hospital at Stockholm,	227	182	177	172	113	174
2. The Infirmary of the Royal Fleet there,	32	12	15	7	5	14
3. The Infirmary in Carlscrona, .	51	61	55	59	61	57
4. The Infirmary in Gotheborg, .	20	19	12	8	1	12
5. The Infirmary of the Gotha Artillery Regiment there, . . .	—	21	31	48	19	29
Total,	330	295	290	294	199	286
SECOND DIVISION.						
Hospital Establishments at Stockholm.						
6. Stockholm Town-Hospital, .	259	221	240	226	172	229
7. The House of Correction, .	45	49	14	—	—	21
Total,	304	270	254	226	172	250
THIRD DIVISION.						
Sick Institutions in the Interior of the Country.						
8. Oestersunds Hospital, . .	77	64	67	72	56	67
9. Fahlun Lazaretto, . .	60	97	58	51	29	59
10. Upsala Lazaretto, . .	70	73	32	49	22	49
11. Eskilstuna Infirmary, . .	39	53	83	60	59	58
12. Westera Lazaretto, . .	170	196	104	108	132	142
13. Orebro Lazaretto, . .	112	108	94	69	70	90
14. Carlstad Lazaretto, . .	215	235	340	357	304	290
15. Wenersborg Lazaretto, . .	120	212	131	144	92	139
16. Bora Lazaretto, . .	—	40	130	157	96	105
17. Mariästad Lazaretto, . .	110	147	118	166	125	133
18. Wadstena Hospital, . .	261	201	149	141	146	179
19. Jönköping Lazaretto, . .	125	116	86	109	144	116
20. Wexio Lazaretto, . . .	131	107	128	132	200	139
Total,	1490	1649	1520	1615	1475	1566
FOURTH DIVISION.						
Sick Institutions in the Neighbourhood of the Shore.						
21. Umea Lazaretto, . .	37	35	47	54	49	44
22. Hernosand Lazaretto, . .	62	46	62	63	59	58
23. Gefle Lazaretto, . .	44	65	37	42	47	47
24. Stockholm District Hospital, .	180	140	34	82	102	119
25. Nyköping Lazaretto, . .	154	125	159	70	138	129
26. Westervik Infirmary, . .	71	85	70	62	82	74
27. Calmar Lazaretto, . .	174	155	165	154	164	162
28. Borgholm Infirmary, . .	29	41	42	82	75	53
29. Wisby Lazaretto, . .	120	93	98	70	61	88
30. Carlscrona District Lazaretto, .	99	73	97	77	111	91
31. Uddevalla Infirmary, . .	381	281	309	320	264	311
32. Gotheborg Infirmary, . .	62	71	75	74	74	71
33. Halmstad Lazaretto, . .	37	41	36	52	43	41
34. Christianstad Infirmary, .	—	—	—	—	139	139
Total,	1450	1251	1291	1202	1408	1427
General Total,	3574	3465	3355	3337	3254	3259

General Summary of the Reports for the year 1824, on the the patients afflicted with Venereal symptoms and Radesyge, who were treated in the principal Infirmaries and Lazarettoes in the kingdom.

	1st Division.	2d Division.	3d Division.	4th Division.	Total.
I. Admitted in the course of the year,	290	254	1520	1291	3355
a. Admitted the first time, or newly infected	267	229	1346	1148	2990
b. Admitted with relapses, . .	23	25	174	143	365
1. After dietetic cure, . .	1	23	38	27	89
2. After fumigating treatment, .	—	2	19	6	27
3. After mercurial treatment, .	13	—	113	107	233
4. After local treat. & other methods,	9	—	4	3	16
II. Returned as	274	187	1479	1257	3197
a. Cured, ...	274	178	1435	1202	3089
1. After regimen, . .	28	143	523	379	1073
2. After fumigating treatment, .	2	21	22	30	75
3. After mercurial treatment, .	122	13	819	772	1726
4. After local treat. & other methods,	122	1	71	21	515
b. Uncured, ...	—	7	15	27	49
1. After regimen, . .	—	5	9	15	29
2. After fumigating treatment, .	—	2	2	—	4
3. After mercurial treatment,	—	—	—	10	10
4. After local and other methods,	—	—	4	2	6
c. Dead, ...	—	2	29	28	59
III. Mode of Infection, estimated per cent.					
a. Concubitus, ...	85	64¼	20	18⅗	
b. Ordinary intercourse, . .	3	9¾	62½	46⅗	
c. Unknown, ...	12	26	17½	34⅘	
IV. Symptoms, estimated per cent. .					
a. Eruption spots, . .	5⅕	9¾	7⅗	12	
b. Ulcers on the mouth, throat, & nose,	4	14⅖	53⅗	45¾	
c. Ulcers on the person, . .	4	16	29⅘	24	
d. Nodes, osteocopal pains, caries, .	2	7⅓	8⅓	8	
e. Discharge from the genitals, .	46	24⅓	6	6	
f. Ulcers on the same, . .	41⅖	39	19⅘	12	
g. Condylomata, ...	12⅕	14⅕	16	10	
h. Buboes, . . .	13⅘	15⅘	⅗	1⅕	
i. Phimosis and paraphimosis, .	12	9⅘	1	⅕	
k. Venereal testicle, . .	3⅘	⅗	⅓.	⅓	
V. Cases in which the mercurial treatment was employed previous to admission,	—	17	83	153	

General Summary of the Reports for the year 1826, on the patients affected with Venereal symptoms, &c. &c.

	1st Division.	2d Division.	3d Division	4th Division.	Total.
I. Admitted in the course of the year,	199	172	1475	1408	3254
a. Admit. for first time, or newly infected,	182	162	1310	1295	2949
b. Admitted with relapses, . .	17	10	165	113	305
1. After dietetic treatment, .	1	7	38	48	94
2. After treatment by fumigation .	—	2	11	6	19
3. After mercurial treatment, .	10	—	110	54	174
4. After local and other meth. of treat.	6	1	6	5	18
II. Reported, ...	196	178	1416	1377	3167
a. Cured, ...	196	167	1355	1336	3054
1. After dietetic treatment, .	34	145	568	700	1447
2. After treatment by fumigation,	—	20	5	22	47
3. After mercurial treatment, .	88	2	687	596	1373
4. After local and other methods of treat.	78	—	95	18	187
b. Uncured, ...	—	8	26	24	58
1. After dietetic treatment, .	—	1	11	8	20
2. After treatment by fumigation,	—	7	1	—	8
3. After mercurial treatment, .	—	—	7	16	23
4. After local & other methods of treat.	—	—	7	—	7
c. Dead, ...	—	3	35	17	55
III. Mode of infection estimated per cent.					
a. Concubitus, ...	84	78	13¾	13¾	
b. Ordinary intercourse, . .	8	12	63½	50¾	
c. Unknown, ...	8	10	22¾	35½	
IV. Sympt. of disease estimated per cent.					
a Eruption ; spots, ...	5	2¾	9½	14¾	
b. Ulcers in the mouth, throat, & nose,	10	23¼	52⅓	50¼	
c. Ulcers on the person, . .	4½	14½	25½	24⅔	
d. Nodes, pains in the bones, caries,	8	9⅓	9⅔	7⅔	
e. Discharge from the sexual parts,	43¾	35½	2⅓	5	
f. Ulcers on the genitals, . .	35¾	21½	12½	9¾	
g. Condylomata, ...	14½	24	12⅔	10⅓	
h. Buboes, ...	11	13	⅓	1	
i. Phimosis, paraphimosis, . .	11¼	5	⅘	½	
k. Venereal testicle, . .	7	3	¼	¾	
V. Cases treated by mercury prev. to admis.	15	18	58	93	184

General Summary of the Reports from the year 1822 to the year 1826, inclusive, on the Patients admitted with Venereal Symptoms, &c. &c.

	1st Division.	2d Division.	3d Division.	4th Division.	Total.
I. Admitted during the five years specified,	1408	1226	7749	6602	16985
a. Admitted first time, or newly infected,	1327	1120	6851	5901	15199
b. Admitted with relapses, .	81	106	898	701	1786
1. After dietetic treatment, .	8	90	190	178	466
2. After treatment by fumigation,	1	10	105	51	167
3. After mercurial treatment, .	45	4	581	449	1079
4. After local and other methods of treat.	27	2	22	23	74
II. Returned by report during same time,	1349	1103	7343	6192	15987
a. Cured, . . .	1347	1035	7073	5969	15424
1. After dietetic treatment, .	123	820	2728	2346	6017
2. After treatment by fumigation,	10	119	144	442	715
3. After mercurial treatment, .	672	74	3862	3029	7637
4. After local and other methods of treat.	542	22	339	152	1055
b. Uncured, . . .	1	55	112	123	291
1. After dietetic treatment, .	—	28	53	51	132
2. After treatment by fumigation,	—	21	9	13	43
3. After mercurial treatment, .	1	3	25	52	81
4. After local and other methods of treat.	—	3	25	7	35
c. Dead, . . .	1	13	158	100	272
III. Mode of infection at an average per cent.					
a. By concubitus, . .	87⅗	66⅗	18½	19½	
b. By general intercourse, .	4⅕	12⅗	61	46	
c. Unknown, . .	8⅕	20⅘	20½	34½	
IV. Symptoms on annual average per cent.					
a. Eruption ; spots, . .	4⅘	9	10⅘	12⅗	
b. Ulcers in the mouth, throat, and nose,	5⅗	19	49⅘	44⅗	
c. Ulcers on the person, .	3⅗	17⅗	26⅗	28⅗	
d. Nodes, pains in the bones, and caries,	3⅕	11	10⅗	9⅗	
e. Discharge from the sexual parts,	43⅗	26⅕	4⅗	5⅗	
f. Ulcers on the sexual parts, .	42⅗	27⅘	17	11⅗	
g. Condylomata, .	13⅕	17⅘	10⅗	10⅕	
h. Buboes, . . .	8⅘	10	⅗	1⅗	
i. Phimosis and paraphimosis, .	16⅘	6⅘	1	1	
k. Venereal testicle, . .	5⅗	1⅗	⅗	⅖	
V. Cases in which the mercurial treatment was used before admission, .	58	109	370	310	847

Inferences deduced from the foregoing tables by the Physicians reporting.

The foregoing list shows,

1. That the number of patients of this description admitted in the year 1826 is smaller than in each of the four previous years.

2. That this number would be by comparison still smaller, f the 139 patients admitted in the year 1826 into the Infirmary at Christianstad, of which the previous years give no report, had not increased the total amount.

3. That, as relates to the classification of individual patients, the number of venereal and radesyge cases admitted into the same place in the year 1826, has been smaller than on an annual average during the whole five years.

With respect to the origin of the diseases under consideration and their symptoms, the report for the year 1826 contains similar results with those of the previous years.

From the whole assemblage of the reports the following results ensue.

1. That the important number of 16,985 patients attacked with venereal symptoms and radesyge, has been admitted during the last five years into the sick-list-establishments, of which reports have been given, and that, notwithstanding the number of those admitted since and with the year 1822, has annually decreased, it is in the highest degree necessary to employ all means without intermission, in order, as far as may be possible, to promote the extirpation of these diseases.

2. That the number of such patients who, during the course of the same five years, were admitted under the third section, including 13 sick establishments in the interior of the country, amounted to 7749, and as again in the fourth section, containing 14 sick establishments in the neighbourhood of the sea shore, amounted to 6602, and that, consequently, the view that such diseases prevail most commonly in the vicinity of the shore, appears to be completely contradicted.

3. That if we consider the mode of infection, and the symptoms of the disease, whose course at an average for the last five years has been noted in the general summary, &c. (Sammandrag u. s. w.) no peculiar difference is found between those in the third and fourth sections, unless that such patients whose mode of infection was ascertained to be unknown, and in whom eruption and spots took place, were admitted to a greater amount in the sick establishments belonging to the fourth section, and that though it may be from this concluded, that cutaneous disorders of uninfectious character prevail more frequently in the vicinity of the sea, than in the interior, the course of the symptoms in the two divisions already specified, appears in other respects to prove, that venereal diseases and radesyge, both in the

interior and on the sea coast, prevail under uniform characters throughout, and in nearly similar proportions, in the different parts of the body which are attacked by the diseases in question; and that their origin must in general be ascribed less frequently to infection by *concubitus*, [Samlag] than to that by mere general intercourse of living together [Sammanlefnad.]

4. That, on the other hand, the course in the first division, comprehending the military hospitals, was the reverse, both as regards the mode of infection, as the origin of the disease may be there almost exclusively ascribed to concubitus—and also as regards the symptoms which therewith agree; and that the second division, consisting of the Stockholm City Infirmary, both in reference to the mode of infection, and also the symptoms, formed in like manner a common point of junction between the opposite forms of the disease, which took place in the first and the last two divisions.

5. That the number of those admitted with relapses in the whole sick establishment during the last five years amounts to 1786, and therefore forms $10\frac{1}{2}$ per cent. of the whole number of patients; but if the 466 which were admitted with relapses after the dietetic treatment, the 167 which were admitted with relapses after the fumigating treatment, the 1079 which were admitted for relapses after the mercurial treatment, and the 79 which were admitted with relapses after the local and other methods, be compared, according to number, with that of the patients specified, who, during the five years specified, have employed the methods of cure mentioned, it appears that relapses after the dietetic cure amount to $7\frac{1}{2}$ per cent.; after the cure by fumigation to 22 per cent.; after the cure by mercury to 14 per cent.; and after the local treatment and other methods to 7 per cent.

6. That of the 15,987 patients enrolled during the same five years, $96\frac{1}{2}$ per cent. were cured, $1\frac{5}{6}$ per cent. were dismissed uncured, and $1\frac{4}{6}$ per cent. terminated fatally; and

7. That the dietetic treatment was, during the same time, employed in $39\frac{1}{8}$ per cent. the fumigating treatment in $6\frac{1}{4}$ per cent. the mercurial treatment in $49\frac{1}{8}$ per cent. the local method and other modes in $5\frac{1}{2}$ per cent. of the enrolled cases, by which meanwhile, in respect to the dietetic and mercurial treatment particularly, it must be remarked, that, agreeably to what the reports for the five preceding years prove, the dietetic treatment, and the mercurial treatment, were used at the following rates during the five years of

		Dietetic.	*Mercurial.*
1822,	-	$32\frac{1}{4}$	$49\frac{1}{2}$
1823,	-	$34\frac{1}{3}$	52

		Dietetic.	*Mercurial.*
1824,	-	$35\frac{1}{10}$	$55\frac{3}{10}$
1825,	-	$46\frac{3}{6}$	43
1826,	-	$47\frac{1}{6}$	$44\frac{5}{6}$

That the dietetic method, which was employed the first three years of this quinquennial space comparatively less frequently than the mercurial method, was, during the latter years, on the other hand, more frequently used; and that, further, the cases, in the cure of which the dietetic and the mercurial method were at once employed, were, however, classified not under the dietetic, but under the mercurial method.

With regard, further, to the dietetic method, agreeably to what the college has promulgated annually, it has been employed differently in different places, and the College judges it requisite to direct attention anew to subsequent circumstances of greater importance, as a result of the observations of the last five years. The dietetic treatment is in almost all patients admitted into the Stockholm City and Country Hospital, employed first for six weeks; and then, after an interval of three weeks, it is resumed for three weeks longer, excepting only in those who were attacked with mild primary symptoms, for whom a space of six weeks was regarded as sufficient. In other sick establishments a still shorter period was in general observed to be adequate, and the numerous cures which were completed within six weeks in the Westera Lazaretto, without any relapse having hitherto occurred, appear to prove, that the time of the observance of the dietetic treatment might be in many cases abridged. This must be of great importance, both for the patients, and particularly for the institutions, in which the local accommodation is limited.

In all places where the dietetic cure has been employed, the China root (*Smilax*) decoction was used at the same time as drink; and as this drug can be easily procured, and at a very reasonable rate, the treatment thereby is not particularly expensive. But as the inquiry, how far this decoction may be replaced by any other, possesses a scientific interest, and is particularly important in cases in which the China root cannot be procured, or may have advanced to a high price, observations undertaken with this purpose merit every attention; on which account, the College, with reference in other points to the circular letter of the previous year, believe it to be their duty to adduce the following observation of the Prov. Physician Assessor Westmann, regarding the recoveries which have been effected at the Mariastad Lazaret, by means of the dietetic treatment with decoction of malt, instead of the China root. "The number of patients treated since 1822 with decoction of malt or wort during the observance of their regimen, amounts to eighty-seven, and hitherto no relapse after this treatment has been observed, although this agent has been applied without mercury, indeed without exception, to consecutive, general, venereal, and all the usual indications of the degenerated venereal disease."

The method by fumigation with Cinnabar is, however, not so frequently employed as in previous years. Agreeably also to the results furnished by experience, in the treatment of the venereal disease, and radesyge in general, its employment is unnecessary; but it may be viewed as a highly efficacious remedy for the cure of inveterate diseases of this character, against which mercurial and other remedies have been employed without avail, also cutaneous disorders of herpetic and leprous character, to the cure of which neither the dietetic regimen, nor the usual mercurial treatment are adequate. Whenever the fumigating method is employed, it is requisite to have a sufficiently warm and well-aired chamber, and opportunity to enjoy the warm bath.

The mercurial treatment is, as has been already hinted, much less frequently adopted now than formerly, and when it is employed, its administration appears to be conducted with the precaution, that the unfavourable consequences which, under other circumstances, are to be dreaded from the use of mercury, should always be avoided. With regard to the different preparations of the mineral which have been employed by different physicians, the College refers to the statement already made in their circular letter of the previous years, and subjoins with regard to Dzondi's method of treatment some remarks. The report of the Chief Field Physician Weltzin for the sick-house of the Royal Gotha Artillery Regiment, observes, among the patients entered, three as cured by this method, of whom one, after the previous employment of the mixed method, had been attacked with a relapse.

The city physician in Götheborg, Regimental Physician Frank, has employed the method of Dzondi in fourteen patients, and states, "with sincere joy I can corroborate the efficacy, and, so far as experience has hitherto gone, the infallibility of this method, and in the cases, in which neither mercury administered according to formerly known and employed methods, nor even the repeated dietetic method availed, the desired and expected result ensued from its employment. Meanwhile I have undertaken, instead of the expensive sarsaparilla, to try in future the less costly *Carex arenaria.*"

The Lazaret Physician in Hernosand, Assessor Hedlund, has employed this method in four patients, three of whom had previously employed without amelioration both the mercurial and the dietetic method of treatment, and the dietetic method alone with as little benefit. The first had previously resisted a preparatory course with Ethiops mineral, sulphur baths and warm baths continued for six weeks; but, notwithstanding that the treatment was conducted with attention to all the slightest circumstances of the prescriptions of Dzondi, the patients were at length reported as incurable. Upon this occasion the Assessor Hedlund observes, "I lose no time in making known these unfavourable results which have attended the method of Dzondi, that my colleagues may not abandon our well established therapeutic methods for the cure of the venereal disease, and have recourse to another, the consequences of which may be worse than the disease itself."

As to the local treatment and other methods, the experience of the five years of which we here speak, has furnished no important observations, excepting that which has been observed in the general garrison sick-house, viz. relating to the treatment of gonorrhœa by means of cubebs. On this point the Report of 1826 contains the following statement. "The usual treatment of gonorrhœa, which, when the patients enter during the first week from the beginning of the discharge, always consists of the employment of cubebs pepper, in the dose of one scruple four times daily,—with restrained diet, has always removed the disease within eight days. If it had proceeded a longer time, or if it were already of some standing at the admission of the patient, the treatment consisted partly in the internal administration of the balsams, partly in injections with astringents, principally with a weak solution of corrosive sublimate."

In the hospital at Stockholm, there was erected in the course of the year 1826, a vapour-bath establishment, or *Finnbadstuga*, which is used with economy of wood and labour. On this Assessor Osbeck further remarks. "In patients who undergo the dietetic regimen entirely during spring and summer, rheumatic pains, and especially scurvy, often supervene; but from these they are quickly and very easily delivered by the use of this bath establishment; and patients admitted labouring under dry skin, and eruptions proceeding from the abuse of spirits, inattention to cleanliness, and similar causes, are completely cured by means of these baths and appropriate diet."

(Signed) C. E. Von Weigel, Er. af Edholm, A. J. Hagströmer, Jöran Rooth, C. Trafvenfeld, Chr. Curlander.

Stockholm, 27th August 1827.

On the foregoing Report the following observations may be submitted.

It appears, both from the tables and also from the report, that in the treatment of cases of radesyge, no distinction is attempted between them and cases of genuine venereal disease. Patients labouring under both disorders are admitted into the same hospitals, are subjected to the same dietetic and medical treatment, and are reported to the government authorities under the same heads. From this it must be inferred, that it is in practice a task of some difficulty to distinguish between the symptoms of secondary syphilis, and those of radesyge, after it has begun to affect the rhino-pharyngeal mucous membrane, the skin and the periosteum.

The only point of difference appears to be found in the alleged mode of propagation. It appears that it is not possible to trace the propagation of radesyge in all cases to sexual intercourse, and that it appears to affect individuals who are merely in the ordinary intercourse of social life. Does not this throw considerable doubt on the doctrine, whether infection or contagion be necessary to the developement of the disease. In the military hospitals alone, did it appear to be more frequently communicated by means of *concubitus* than otherwise.

It may be further observed, that, in different circumstances and different situations, the leading symptoms of the diseases are very different. Thus, in the first and second divisions of the public institutions, viz. the military hospitals, and the infirmaries for the town of Stockholm, the most predominant and largest proportion of the cases appear in the shape of discharges from the sexual organs, that is from the urethra in males, and the vagina in females, it is presumed, or ulcers in the external parts of generation. These amount in the military hospitals to the per centage of 46, $43\frac{2}{4}$, $43\frac{2}{5}$, *Blennorrhoea*, $41\frac{2}{3}$, $35\frac{3}{4}$, and $43\frac{3}{5}$, ulcers on the glans, or prepuce, or the labia.

It is remarkable, on the other hand, that this large proportion undergoes a considerable diminution in the third and fourth divisions, namely, the inland and sea coast provincial hospitals. Thus the per centage of blennorrhoea cases falls as low as 6 in both departments, in 1824, $2\frac{1}{5}$ and 5 in 1826, and $4\frac{2}{5}$ and $5\frac{3}{5}$ on the average from 1822 to 1826 inclusive; and the per centage of ulcers on the genitals varies in the two classes of departments, from $9\frac{3}{4}$ to $19\frac{2}{3}$, and presents an average of 17 in the country hospitals, and $11\frac{3}{5}$ in the sea coast institutions, during a period of five years, from 1822 to 1826, inclusive.

Very different is the rate of prevalence of ulcers in the mouth, throat, and nose, and ulcers on the person, as compared with this frequency of symptoms usually called primary, in the several divisions of the tabular views. Thus the prevalence of ulcers of the guttural or nasal mucous membrane, or of the surface of the skin, is much less frequent in the military hospitals than in the Stockholm infirmaries, and much less so in the latter than in the provincial hospitals of the inland and sea coast districts. In the military hospitals, they amounted, in 1824, only to 4 per cent. each, in 1826 to 10 per cent., as to the nose and throat, and 4½ as to the person, and on the average of five years, from 1822 to 1826, to $5\frac{6}{5}$ for the former, and 3⅖ for the latter. In the second division, on the other hand, or that of the Stockholm town hospitals, this proportion rises to 14⅗ and 23¼ per cent. for ulcers of the rhino-pharyngeal membrane, on an average of 19 per cent. and 16 per cent., and 14½, or an average of 17⅖ for ulcers on the cutaneous surface. In the third division again, or the hospitals of the inland country situations, this class of symptoms in the order of ulcers of the nose, mouth, and throat, attains the large proportion of 53⅖ 52⅓, or an average of 50 per cent.; and in that of ulcers of the cutaneous surface, the rate of 29⅖ and 25½ per cent. or 26⅗ at an average of five years. And in the fourth division, or that of the sea coast hospitals, the amount of ulcers of the nose and throat varies from 45¾ to 50¼ per cent., or gives an average of 44⅗; while that of ulcers on the person in the same division amounts to 28⅖ per cent.

To assign any thing like a satisfactory reason for the different proportions, in which these sorts of affections prevail in the different classes of patients, must be very difficult, if not wholly impracticable; unless we had some more accurate facts on the diagnostic characters of the two disorders, than we yet possess. The only guide which we have is the fact simply probable, that in radesyge the occurrence of puriform discharges from the sexual organs or ulcers in the external parts is not usual, or is rather rare, as a primary symptom; and this circumstance might probably be the means of excluding from the list of those affected with radesyge, also patients presenting such symptoms. On the same principle, perhaps, might be excluded, the small proportion of cases in the third and fourth divisions, viz. the country and sea coast hospitals, presenting symptoms of *phimosis* and *paraphimosis*, bubo or venereal testicle.

It would be impossible, nevertheless, without violating the rules of sound deduction, to draw the conclusion, that all the cases in which prominent symptoms were ulcers in the rhino-pharyngeal mucous membrane, were to be referred to the head of radesyge. Many of these may have been the result either of the secondary operation of the venereal poison, or of the conjoined operation of mercury and the venereal poison in bad constitutions, in which hygienic rules were much disregarded or totally neglected. The ulcers on the surface of the person may have been the result of either of the causes now mentioned, or of the radesyge alone, though certainly the weight of evidence is in favour of their belonging to the latter head. It is almost superfluous to remark, that a similar degree of doubt hangs over the class of symptoms referred to the periosteum and bones, the origin of which is equally ambiguous. It is in short a great desideratum in the report, or rather in the returns from which the report is framed, that an accurate distinction is not drawn between the two diseases.

It must be further remarked, that, in stating the per centage of recoveries under the different therapeutic methods employed, there is made between the mercurial mode of treatment, and that by fumigation with cinnabar, a distinction, the reason and merits of which it is impossible to perceive. What difference may exist between either the physiological or therapeutic effects of mercury administered in any of its usual preparations, either by the mouth, or by friction on some part of the skin, or by the vapour from cinnabar applied to the bronchial membrane and skin, I must confess my incapacity to discover, and I can see no ground for the distinction observed by the subscribers of the foregoing report, when it must be admitted that mercury, applied in either mode, is capable of producing its genuine physiological effects.

For these reasons I conceive it is requisite to make an alteration on the statements of the numbers of cases of relapse under the different modes of treatment pursued, which will show more clearly the nature and effects of the treatment by means of mercury, in whatever form it is administered. From this would result the following numbers as to relapses, after each method of cure.

		Relapses.	*Per cent.*	
Dietetic treatment.		466	7½	39⅛
Mercurial, including fumigation.	1079 167	1246	36	55⅜
Local and other modes.		74	7	5½

	1822.	1823.	1824.	1825.	1826.
Dietetic.	32¼	34⅓	35$\frac{1}{10}$	46⅜	47⅙
Mercurial, not including fumigation.	49½	52	55$\frac{5}{10}$	43	44⅚

This shows that relapses are greatly more frequent after the mercurial treatment, whether administered by fumigation or otherwise, than by any other method, since this method furnishes relapses at the rate of 36 per cent., whereas, neither the dietetic nor the method by local means exceeds 7½ per cent.

The general results presented by these tables further lead to the conclusion, that a larger proportion of cases recovers, generally speaking, under mere dietetic or other means, without the use of mercury, either by inunction internally, or by fumigation, than when the use of the mineral is withheld. It is remarkable that the number of relapses, which must generally be regarded as imperfect cures, is much greater after the use of mercury than by any other means.

ART. V.—*Report of Consecutive Cases of Traumatic Erysipelas, and of Diffuse Inflammation of the Cellular Tissue, the latter from the absorption of animal poison, occurring in the Hospital Practice of the* 79*th Regiment at Glasgow, in March and April* 1837. By D. MACLACHLAN, M. D. Assistant Surgeon 79th Regiment.

THE nature and treatment of diffuse inflammation of the cellular tissue have of late years attracted the attention they merit. From whatever cause originating, the disease is one highly deserving of inquiry; but that form, proceeding from dissection wounds, or from the absorption of animal poison, is peculiarly interesting, and to every member of the profession "of momentous practical importance." Dr Duncan, whose name is intimately associated with the subject, has done much to elucidate its nature, and by collecting together a number of authenticate cases, many of which appear to have been solely owing to the entrance of morbific matter into the system, has enabled the practitioner to arrive at sound practical deductions. The profession is also deeply indebted to the labours of Dr Butter, Mr Travers, and Mr Lawrence; and an excellent practical paper by Mr Stafford has recently appeared in the last volume, the 20th, of the Medico-Chirurgical Transactions. Much, however, is still wanting to a satisfactory knowledge of this disease; and it would amply repay the labour of the philosophic, industrious, and penetrating student were he to collect the scattered information and isolated cases, which he will find in various periodical works since the essay of Dr Duncan, and the work of Mr Travers appeared.*

From a conviction that it is only by a detailed and faithful history of such cases that a right knowledge of the origin can be obtained, as they exhibit the disease in its worst form, and are strikingly peculiar by their consecutive accession, the three following appear to me worthy of being recorded. In connection with them, and in order to leave no collateral circumstance of importance unnoticed, I think it necessary to precede their detail by a short account of a few cases of traumatic erysipelas, two of which had occurred in the regimental hospital immediately before their appearance, and, from attending on one of which, the first case of diffuse inflammation of the cellular tissue undoubtedly originated.

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* See the references under the article "Cellular Tissue," in Copland's Dictionary of Practical Medicine. Several interesting cases have, however, been omitted here. A very good tabular view of upwards of forty-six cases, recorded by Colles, Duncan, Travers, Sir Astley Cooper, Shaw, Thomson, and others, in which several leading facts are stated, may be found in the third volume of the Glasgow Medical Journal.

I. *Cases of Traumatic Erysipelas.*

Case 1.—A soldier of the 77th Regiment had been upwards of two years in hospital with *angina pectoris*. For alleged symptoms affecting the head, and after a variety of other means had been tried in vain, a seton was introduced into the back of the neck. About ten days afterwards, on the 7th March, this was followed by an attack of erysipelas, commencing in the wound, slowly spreading over the scalp, face, and upper part of the chest, and threatening dissolution. By the expiration of a fortnight, the man was, however, convalescent.

Case 2.—In the meantime, on the evening of the 8th, private James Smith, aged 31 years, with slight, superficial, contused and lacerated wounds on the scalp, was admitted into hospital, and accommodated in the same ward, but placed fully twenty feet distant. Cold water was applied to the head, the hair having been previously removed, and the bowels were freely purged with salts and tartar emetic. On the morning of the fourth day after admission, the 12th of the month, the wounds assumed an unhealthy aspect, becoming puffy and tender, and discharging on pressure a thin ichorous fluid; in the afternoon erysipelas had fairly set in. And from this date the disease progressively advanced in extent and severity. The face soon became frightfully swollen and distorted; the eyelids suppurated and sloughed; alarming typhoid and cephalic symptoms appeared; coma supervened about a week before the termination, and he died on the evening of the 26th, fourteen days from the accession of the attack.

On dissection, eighteen hours after death, the erysipelatous parts presented a dull yellowish appearance, with shrivelling of the integuments; the swelling of the face had very little subsided, and was nearly as firm and inelastic as before death. An incision allowed the discharge of thin dark-coloured sanguinolent serum infiltrated in the cellular tissue. On carefully removing the scalp, the wounds were found to have penetrated no farther than the pericranium, which retained a healthy appearance.

The *calvarium* being raised, the *dura mater* was seen to fluctuate, and on opening the arachnoid sac a small quantity of transparent serum flowed out. The greater part of the *pia mater* appeared unnaturally vascular, but on the anterior lobe of the left hemisphere it was remarkably so; throughout, it was a purple or livid redness, evidently proceeding in great measure, if not wholly, from engorgement of the veins of the membrane, and the greater vascularity on this side was satisfactorily accounted for by the patient having expired lying on it. Between the *tunica arachnoidea* and *pia mater* a turbid fluid was effused, particularly observable in the intergyral spaces. The substance of the brain was healthy. On squeezing the medullary portion, thin dark-coloured blood escaped from numerous points. The lateral ventricles were filled with clear transparent serum, and the *plexus choroides* was paler than usual.

The *pleura pulmonalis* and *costalis* on the left side of chest were firmly united by false membrane, seemingly of long standing. Both lungs were sound, and there was no effusion into either side of the chest. The large veins and both ventricles contained thin dark-coloured blood.

The abdominal viscera appeared healthy.

On the appearance of erysipelas both these men were removed to another ward.

Case 3.—A debilitated, paralytic young man, who was under treatment in the ward in which these cases had first appeared, had a seton inserted about a week after their removal. There were several ulcers, and no case of erysipelas in the ward at the time; but although the bedding of the patients had been taken away, no other precaution had been adopted. The disease, in fact, had not given alarm, and the two cases might be attributed to atmospherical or constitutional causes. In ten or eleven days afterwards, the wound was attacked with erysipelas, spreading exactly in the same order as in the first case related; comatose symptoms and singultus speedily ensued, and he died on the evening of the third day.

On inspection after death, the brain was considered firmer than natural, but exhibited no decided trace of disease. Between the *tunica arachnoidea* and *pia mater*, as in Smith's case, a turbid fluid was effused, giving the appearance of thickening and opacity of the naturally pellucid arachnoid.

The viscera of the thorax and abdomen were sound.

Case 4.—Nearly six weeks after the appearance of these cases, and after the usual precautionary measures, white-washing, thoroughly cleansing the wards, &c. and removing every article of bedding, had apparently eradicated the disease, a fourth case, assuming the character of phlegmonous erysipelas, arose from the application of a blister to the chest, in a patient with pneumonia. He recovered. No other cases of erysipelas but these were seen in hospital.

Cases 5 and 6.—Meanwhile a woman, living in the vicinity, employed in washing the linen of the man Smith, contracted the disease. She had a smart attack, affecting the face and scalp; and, as she was recovering, a young person waiting on her was similarly seized. She also got well. Erysipelas was not at all common in the town at the time, and, on good authority, except these, there were no cases in the neighbourhood of the barracks.

II. *Cases of Diffuse Inflammation.*

Case 1.—On the evening of the 27th of March, the first case of diffuse inflammation of the cellular tissue was admitted into hospital. It appeared in private William Wilson, 79th Regiment, 39 years of age, a stout made, healthy, muscular man, of florid complexion, and of rather dissipated habits. On admission the middle-finger of the right hand appeared to be affected with paronychia, accompanied with febrile symptoms, and excessive pain, extending to the axilla and top of the shoulder. He had been attending on Smith, the second case of erysipelas, above related, the night before the death of this man, 25th—26th, applying fomentations to the erysipelatous parts, and otherwise assisting him; but he was quite unconscious of having injured the finger in any way, or of its being scratched, wounded, or abraded. He then, for the first time, felt pain in the finger, and on looking at it he observed "a small black spot" close to the distal end of the nail. Next morning, after admission, the 28th, when first seen by me, the finger was extremely painful, and so tender that he could hardly bear its examination. The swelling was tense, firm, and extended round its circumference to the metacarpal joint, where the redness gradually terminated. There were great anxiety and distress, restlessness and hurried respiration; pain in the axilla and side of the chest; pulse 80, open, and easily compressed; tongue furred, expanded, and moist.

On the morning of the 29th, the finger had a yellowish mottled appearance, from subcuticular serous effusion, and there was a large vesicle, filled with a dark-brown coloured fluid, occupying the greater part of the distal phalanx. The back of the hand was red and slightly swollen. A few lymphatics were seen running along the ulnar side of the fore-arm to the elbow-joint, and on the arm there were some unconnected patches of redness. There was great tenderness in the axilla, with deep redness of the integuments, the latter extending along the infra-clavian space to the mesial line; the pectoral muscle was slightly swollen, and around its margin a rose-coloured blush.

The anxiety and oppression had increased. He had an occasional short cough, with frothy mucous expectoration ; pulse 84, full and soft. He had been ordered an emetic the preceding day, at bed-time calomel and opium, and the hand was fomented and wrapped in a lintseed poultice.

To-day, the parts over the distal and middle phalanx were laid open, by two separate incisions, down to the bone. A very small quantity of pus, not more than a single drop, followed. From this proceeding he obtained some relief, but the general symptoms remained unabated. The bowels were ordered to be opened with salts and tartar emetic, and he had two grains of calomel, a quarter of a grain of opium, and a grain of ipecacuan every third hour. The tepid fomentations and the lintseed poultice were continued.

On the following morning, the 30th, the finger felt easier, and the redness had abated. The pectoral muscle was more swollen, and the whole of the mammary region more painful. The axilla and side of the chest had the same appearance as on the preceding day. He had passed a better night. The cough was stationary ; pulse 100, easily compressed ; bowels costive ; tongue highly loaded. He was extremely nervous, anxious, and distressed. The calomel, opium, and ipecacuan were continued, the bowels were acted upon by a common enema. He was ordered the *Liquor Ammoniæ Acetat.* and the fomentations and poultices as before.

He passed a very restless night ; the redness of the skin had extended, and now occupied the greater part of the right side of the chest ; the tumefaction and tenderness of the pectoral muscle had increased ; more lymphatics were seen on the hand and fore-arm, while the arm remained almost free from pain or redness. The centre of the tumefied mammary region retained its natural colour, and the redness around it was not continuous. He would not allow the hand to be touched. His breathing was rapid and painful, the cough less frequent. He had hiccup, and was occasionally bathed in perspiration. A consultation recommended a continuance of the same means.

On the 1st of April, 85 hours from the commencement of the calomel, and as near as could be well ascertained, 152 hours from the commencement of the disease in the finger, his mouth was found affected. There was, however, no abatement in the symptoms ; on the contrary, the anxiety and distress were indescribable. The agonizing pain in the hand, axilla, and chest, occasioned fits of profuse sweating the whole of the preceding day and night, and nothing appeared to afford relief. The hiccup had become more troublesome ; the pulse was 120, open and irritable. There was no discharge from the finger, and nothing like fluctuation could be detected anywhere. The calomel was continued, and he was now ordered stimuli, wine, and the carbonate of ammonia in the camphorated emulsion. At 3 P. M., patches of redness of a hand's-breadth were observed in the umbilical and right iliac region. The erysipelas had nowhere extended beyond the mesial line, which here and there had a puckered appearance. He had now tenderness in the abdomen, and purging of several hours duration. The pulse had fallen to 100, and was of tolerably good strength, and the hiccup had left him. The calomel was discontinued. At 8 P. M. he was evidently sinking; the hiccup had soon after the last visit returned, and with it came retching and vomiting; the respiration was laborious; he was suffering acutely from pain in the chest and abdomen; the countenance was pale and shrunk. Partial relief was obtained from a bolus of opium, camphor, and carbonate of ammonia, which remained on his stomach. He expired at eleven o'clock the following day, about 277 hours from the beginning of his illness.

The following is the report of the appearances on dissection, 24 hours after death.

No emaciation. The sheath of the flexor tendon to the palm of the hand was here and there infiltrated with purulent matter. The other structures were sound. From this point to the axilla, and the insertion of the *pectoralis major* in the humerus, there was no trace of disease, with the exception of vascular turgidity of the cellular coat of the upper half of the brachial vein, the internal coat of which was free from redness or pus. The cellular tissue in the axilla and lateral aspect of the chest for two hand's-breadth were minutely injected, both the venous and arterial capillaries being engorged, without, however, effusion or change of structure. A perpendicular section of the *pectoralis major* and *minor* exhibited the intermuscular cellular substance in a state of disorganization, softened and infiltrated with pus. On raising this muscle from its attachment to the ribs and sternum, the interposed cellular tissue was found similarly affected. The disease had even extended to the intercostal muscles of this side, patches of which, about the circumference of a shilling, were of a gelatinous consistence. Corresponding with one of these disorganized patches, the *pleura costalis* and *pulmonalis*; to a similar extent, were inflamed and covered with fibrine. There was no serum in either side of the chest; the lungs appeared sound; but the *pleura pulmonalis* was connected to the *pleura costalis* by an old strong adhesion, near the sternum. The heart and blood-vessels were healthy.

The omentum was unusually vascular; several patches of redness, apparently inflammatory, were observed in the peritoneal coat of the jejunum and ileum; but from these the larger intestines were free. The internal coat of the stomach and intestines was not examined, owing to the time occupied in minutely examining the state of the arm and cellular tissue encroaching on the hour of interment.

Case 2.—The second case, occurring in private John Wilson, aged 43, 79th Regiment, one of the hospital orderlies, a man of spare habit and sallow complexion, rather dissipated, but in good health, was admitted on the morning of the 7th April. He had attended on the last case, and was present at the inspection of the body on the 3d, handling the body, and washing the sponges during the dissection. In this case, as in the other, there was no trace of wound, scratch, or abrasion on the hand whatever. The first prominent symptom he complained of was acute pain in the right axilla and top of the shoulder, accompanied with tenderness on pressure in the trapezius and pectoral muscles. At this period there was neither tumefaction nor redness of the parts. He had felt chilly and unwell for three days, almost since the dissection had taken place, and on the evening preceding admission he had a severe shivering fit. He was now feverish; pulse 86, full, and easily compressed; tongue foul and moist; urgent thirst; skin hot and dry; no headach; countenance pale and anxious, and he was extremely apprehensive, and strongly impressed with the idea, that he had been infected by the preceding patient. Bowels open from salts and senna he had taken on first feeling unwell. On the morning after admission the symptoms were aggravated; pulse 100, and soft; there was no redness, but great tenderness in the parts, and he was most distressingly anxious, harping on the idea of being infected. The bowels had been well opened by jalap and calomel. He had perspired freely from ten grains of Dover's powder with three of calomel taken at bed-time, and he had passed a good night. A consultation recommended venesection, and a repetition of the calomel and Dover's powder at bed-time. He lost about ten ounces of blood, natural in every respect, and the following morning, the 9th, he felt better. The trapezius and pectoral muscles were still extremely tender, but perfectly natural in appearance; he had slept well, and perspired freely; pulse 80, soft. The calomel and Dover's powder were ordered morning and evening. He was much the same on the 16th. He had passed another quiet night, sleeping well and perspiring copiously; pulse 76; bowels loose; tongue highly furred; thirst abated. He took half an ounce of castor oil, and the powders were continued. By the 11th, the pain had extended to the whole of the lateral portion of the chest, unaccompanied with redness or tumefaction. In addition to the powders, he was ordered the *Vinum Colchici* in the camphor emulsion. On the 12th, the sixth day of treatment, and the ninth from the first feeling of indisposition, the true nature of the disease became unequivocal. There was a reddish blush on the lateral aspect of the chest, six or eight inches in length, and of about a hand's breadth; and the trapezius was tumefied; the anxiety had increased; the face was flushed, and the pulse 80, open and compressible. He slept indifferently, but had had a quiet night; he always felt worse during the day. Two grains of calomel with a grain of opium were prescribed every three hours, with the colchicum and camphorated emulsion. The following are the remaining reports as entered in the register.

14th. Erythematous blush on side; presents the same aspect; there is neither swelling, fluctuation, nor bogginess; very drowsy from the opium; countenance shrunk; pulse 120, feeble; tongue much furred; bowels bound. An incision, upwards of two inches in length, was made in the side through the fibres of the muscle. There was no discharge, and the parts appeared healthy. To have a common enema, four ounces port wine during the day, five grains of the carbonate of ammonia in an ounce of the camphorated emulsion every three hours, and the calomel and opium, the latter in small quantities, to be continued.

Vespere.—Repeated stools from the enema, since which he has been less drowsy; respiration hurried and thoracic; no tenderness in the abdomen. Medicines continued, and a sinapism to be applied to the chest.

15th. Has been passing thin, watery, dark-coloured stools in bed; countenance more shrunk; is perfectly rational, and has not wandered except when under the influence of the opium; pulse 130, of tolerably good strength; makes no complaint of pain; redness more livid; respiration more laborious. Wine and carbonate of ammonia increased, and the calomel and opium continued in intervals of four or five hours.

Vespere.—Occasional retching and vomiting of dark bilious matter since the forenoon, with singultus, and he has passed four or five stools of a similar colour in the bed-pan: pulse smaller and quicker. To have immediately a grain of opium and three of camphor made into pills, with a drop of creosote. Calomel to be discontinued.

16th. Rapidly sinking; pulse imperceptible at the wrist, and his voice is indistinct; hiccup and vomiting continue; breathing hurried; neither pain nor tenderness; parts about the shoulder and neck retain their natural colour. Died at 11 A.M. on the thirteenth day from the commencement of the disease.

Dissection 48 hours after Death.—The integuments of the right side of the chest and upper extremity were raised, without observing any disease of the subjacent cellular tissue, the veins, or lymphatics. On being cut into, the *trapezius*, pectoral, and *latissimus dorsi* muscles presented a natural aspect, but on raising the *latissimus dorsi* from its attachments, the interposed cellular substance was found infiltrated with thick purulent matter. Opposite the incision made on the 14th, on the lateral aspect of the chest, beneath the *serratus magnus anticus*, there was a purulent deposit of considerable extent; the intermuscular cellular strata remained sound. In dividing the ribs on the left side, for the purpose of removing the sternum, a quantity of sero-purulent matter escaped, and on this being effected the whole of the exposed parts were seen highly vascular.

Here and there the pleura had a mottled appearance, owing in part to sanguineous effusion into the adjacent cellular web, but proceeding chiefly from minute injection. A strong old adhesion of the *pleura costalis* and *pulmonalis* on the left side being divided, the surface of the lung anteriorly, for rather more than half its extent, was covered with adherent purulent matter. Where it could be detached with the sponge, the pleura presented a beautiful vascular net-work. Nearly similar appearances, though not to the same extent, existed in the right side. There was no fluid in this side of the chest, and not above half an ounce was contained in the left, where it seemed to be limited, and confined by recent adhesions. A section of the lungs exhibited nothing unusual. The *pericardium* was thickened and unusually strong. Its internal surface was occupied with small vascular patches, and studded with flakes of fibrine, easily detached. The external surface of the right ventricle was minutely injected, the arterial branches of a bright vermilion colour and arborescent; its veins were gorged, and towards the apex of the heart the surface appeared rough and irregular from effused vascular lymph. About half an ounce of turbid serum was found in the sac. The substance and internal structure of the heart were natural, and on minute examination no trace of disease could be discovered in the large blood-vessels.

The stomach and intestines were much distended, and of a pale rose colour. A narrow, arborescent, and net-work line of vascularity ran along the anterior surfaces of the colon and greater extent of the small intestines, occasionally intercepted by sound portions of the peritoneum. The intestines were agglutinated by a thin cob-web effusion of lymph. The mucous membrane, of nearly the whole of the digestive canal, presented the same pale rose colour observed externally. The contained matter was of a dark-green colour. The remaining viscera appeared healthy.

Perhaps the most remarkable features observed at the *post mortem* examination were the extensive unequivocal marks of secondary inflammation in the great cavities. The head was not examined.

Case 3.—For the following notes of the third case I am indebted to Dr Muter, Glasgow, the gentleman who attended the patient. The subject of it was foreman to an undertaker in town. It would appear that, in placing Wilson's body into the coffin on the forenoon of the 18th, a scratch he had received from a nail the day before, over the anterior aspect of the right wrist-joint, came in contact with some of the discharges. This at least was his impression. The wound was open and bleeding at the time, and the dissection had just been completed. It is to be regretted that a *post mortem* examination of this case was not permitted. A better marked instance, however, of the usual effects of the introduction of animal poison into the system cannot well be conceived, and in no other way can the symptoms be so satisfactorily accounted for. Very nearly the same plan of treatment seems to have been pursued, the chief reliance, apparently, having been placed in calomel and opium. Until of late incisions were not allowed. I believe the muriate of morphia was liberally given to allay irritability, although not mentioned in the report.

Case 4.—John Weir, aged 32, wright.—19th April 1837.—Two days ago he accidentally wounded himself with a nail in the right wrist, and this morning the part became so painful, that he was induced to apply here for advice. He stated that yesterday he had been engaged coffining the body of a soldier who had died of erysipelas. There was some slight swelling in the site of wound, exceedingly painful on being touched. He had rigors during the last night.—Treatment, leeches, poultices, a smart purge.

20th, Swelling nearly gone, but still much pain in part, and a number of red lines are observed extending from it to axilla, where the glands are slightly swollen and painful.—Leeches and anodyne fomentations.

21st, A restless night; hand much swollen, and exquisitely painful; pulse 100; tongue white and moist; skin warm; thirst.—Purgative, calomel and opium.

22d, Less pain, but swelling extending, accompanied with an erysipelatous blush. Frequent rigors; pulse 110; tongue dry; thirst urgent. Patient and friends will not allow incisions to be made.

23d, Swelling and redness have reached nearly to elbow-joint, and there are several distinct patches in different parts of arm; pulse 112; tongue dry and brown in centre; intense thirst; mouth affected by the calomel.—Intermit the calomel.

24th, Pulse 120, weak—in other respects as yesterday.—Sulphate of quina, beef tea.

25th, Pulse 120, firmer. Friends have consented to the incisons. Two made, one on back of hand, the other on inner aspect of fore-arm, through skin and fascia, both giving vent to a considerable quantity of healthy pus.—Poultices, wine.

26th, Lies prostrate. Tongue dry and brown; pulse small and rapid; countenance much altered; breathing hurried; perspires profusely; some hiccough. Complains of pain in *left* arm and hand, the temperature of which, as well as of the left foot, is lower than that of right. Swelling and redness nearly gone from arm and hand; incisions discharge freely.—Stimulants.

27th, Died at 3 P. M. Mortification had commenced in left foot and hand some hours previous to death. An inspection was not allowed.

The above cases are remarkable in many respects. I am not aware that there is on record a series of consecutive cases such as they present. Instances are mentioned by Colles, Duncan, and others, in which two or more individuals have suffered from the examination of the same body. Here, however, we have three cases, all fatal, one following the other; and the third placed without the sphere of infection, were this possible, living in the town, and breathing a different atmosphere, but the victim of this formidable disease, the moment he is by the wound on his wrist subjected to the influence of the morbific matter, or the discharges of the body with which it has come in contact. Whether these cases were accidental, depending on constitutional depravity, or whether they originated in any peculiarity of the fluids, or secretions in the bodies examined, is a question of much importance. The men appeared to be in good bodily health, and on minute investigation I heard of no cases of a similar nature in the town or neighbourhood. There were none in the infirmary,—a very good criterion of the existence of any one disease, and none of the medical officers had recently seen any. I am, therefore, clearly of opinion, that they were the consequence of the absorption of some deleterious animal poison, of a peculiarly virulent and highly contagious nature; and I form this opinion from an attentive consideration of the cases. In the two first, there was no wound, abrasion, or scratch; and in the second case, that of John Wilson, the hand remained sound, the disease first exhibiting itself in a remote situation, the axilla and top of the shoulder simulating acute rheumatism, with which, in fact, for some days it was confounded. The first case admitted, presenting itself in William Wilson, and resembling on admission *paronychia gravis*, is peculiarly interesting. As remarked in the history of the case, he had been attending an erysipelatous patient. The finger became painful during the night, while applying fomentations. On the morning of the third day, there was a large dark vesicle at its extremity, the axilla was acutely painful, and the pectoral muscle swollen. There was no doubt of the nature of the disease. The only similar case I have been able to find recorded, in which the poison was derived from the living subject, has been detailed by Mr Evans, in the Edinburgh Med. and Surg. Journal, January 1828. In this case, the patient, a country practitioner, was inoculated while opening an abscess from urinary infiltration, the hand being wounded. Another case has been mentioned to me as having occurred in the neighbourhood of Edinburgh, where the individual, dressing a dissection-wound, on an incision made in consequence, was seized with diffuse inflammation of the cellular tissue in the arm, accompanied with the usual symptoms of dissection-wound, and died. With the particulars of the case I am unacquainted.

One remark on the treatment pursued in the above cases. I regret that deeper and more extensive incisions were not made in the case of John Wilson, the hospital orderly, as soon as the erysipelatous blush made its appearance on the side. No fluctuation nor doughy feeling, however, could be detected in either of the cases that came under my care, and on *post mortem* examination the matter was found deep seated, in one case, in the cellular sheaths of the *latissimus dorsi, pectoralis major* and *minor*, and *serratus major* muscles, and in the other in the intermuscular cellular strata of the pectoral and intercostal muscles, as well as in the interposed cellular tissue. Though the incision made in John Wilson's case entered the substance of the muscle, it did not reach pus; it lay deeper, and without going, probably, to an unwarrantable depth, it could not have been reached in either case. The bleeding practised in this instance was at the recommendation of an old and experienced surgeon; but I am convinced that general blood-letting is rarely admissible in diffuse inflammation of the cellular tissue, from whatever source, and in whatever constitution, and I was sorry at following the recommendation, small as was the quantity lost. The plan of treatment pursued was a modification of that recommended by Dr Colles in Dublin Hospital Reports, Vol. iv. p. 249, " the administration of calomel with the view of speedily exciting ptyalism." He would prefer giving it in an uncombined form. But with opium it is more soothing, and as certain if not more so, of speedily succeeding. No benefit seemed to follow it in either of the two cases, that of William Wilson and John Weir, in both of which it had soon taken effect, and I fear the plan is less likely to succeed in this formidable disease than the advocates of that remedy may be inclined to imagine. Leeching, tepid fomentations, incisions immediately or even before fluid has been detected, and the exhibition of large doses of opium or of the muriate of morphia, seems in the majority of published cases to have been most successful. It must be confessed, however, that with all our resources, the disease is amongst the most unmanageable with which we are acquainted. Of the cases related by Colles, and those accumulated by Duncan and Travers, very nearly one-half perished, and it is probably not above the average to reckon the rate of mortality at 38 per cent. In numerous instances of recovery the consequences have lasted for four, six, or eight months and more. A disease so fatal, or, in the more favourable cases, severe in its effects, demands the greatest caution from the morbid anatomist, especially in the examination of recently deceased bodies before interment, and more particularly of those who have died from any form of inflammation of the serous membranes. It seems to be an established fact, and two of the above cases confirm it, that infection frequently takes place from mere contact with the poison, without any abrasion of the cuticle. It also appears that the smaller the wound, the more dangerous have been the consequences. Dr Duncan, as a precautionary measure, has recommended the inunction of the hands with lard; others use the oil of turpentine both as a preventive and antidote. In dissecting the bodies from which infection emanated in the above cases, I made use of the *Ungt. Cetaceum*; and I mention this apparently trivial circumstance, as an orderly, who used the same precaution, and who was more exposed than the orderly, Wilson, by having his hands constantly immersed in the fluids, escaped, whilst this person, who adopted no precaution, but whose hands were sound, became a victim to the disease.

Edinburgh Castle, July 1837.

Art VI.—*On Inadequacy of the Valves of the Aorta.* By WILLIAM HENDERSON, M. D.

Dr Corrigan has the merit of having made the first attempt to determine the symptoms which distinguish imperfection of the aortic valves,* and of having succeeded so far as to have pointed out some phenomena frequently attendant on the disease. The signs proper to it he concludes to be as follow: 1*st*, Visible pulsation of the arteries of the head and superior extremities; 2*d*, *Bruit de soufflet* in the ascending aorta, in the carotids, and subclavians (during their diastole.) 3*d*, *Bruit de soufflet*, and fremissement, or a peculiar rushing thrill felt by the finger in the carotids and subclavians, (also during their diastole.) About the same time, in 1832, Dr Hope, * in treating of the murmurs which result from diseases of the aortic valves, says, " a murmur may accompany the second sound when there is regurgitation through the aortic valves, and its source may be known by its being louder and more superficial opposite to those valves than elsewhere. I have never found it strong, and I doubt whether it can be so, as the instantaneous manner in which the ventricle is refilled by its diastole must prevent the regurgitation from being considerable." In 1834, M. Guyot published at Paris a thesis, containing an account of four cases of this disease which had been observed in the hospital practice of M. Rayer. He sums up the peculiar signs of these cases under the following heads. 1. " Absence du bruit clair, ou superieur, du cœur, (second sound,) et son remplacement par un bruit de soufflet tres-sensible au cœur luimême, dans l'aorte ascendante, les carotids, et les sous-clavières. 2. Pulsations visibles des artères du cou, de la tete, et des membres supérieures. 3. Pouls fort, frequent, et vibrant."† M. Charcelay in a thesis of 1836, gives an account of ten new cases, and conceives the pathognomic sign to be a *bruit de soufflet* in place of the second sound having its maximum at the root of the aorta, and prolonging itself more or less through this artery and its principal branches. As signs of subordinate value he enumerates—a strong, hard, and vibrating pulse; visible pulsation of the arteries of the neck, head, and superior extremities; and flexuosity of some of the vessels.‡ A few cases have besides appeared in several Bristish journals, viz. one by Dr MacAdam in the ninth volume of the Dublin Journal of Medical and Chemical Science, in which, among many symptoms of derangement of the circulation, there were remarked—a pulse at the wrist, 90, small, weak, and occasionally intermitting; impulse of the heart weak, its sounds clear and loud, and heard distinctly all over the anterior parts of the chest—the second sound accompanied with a peculiar musical murmur, resembling the cooing of a pigeon; two cases by Dr Watson, in the nineteenth volume of the London Medical Gazette, in one of which it was remarked that a loud and prolonged sound was heard, accompanying the diastole of the heart, with its greatest intensity at the upper part of the lower third of the sternum, like that produced by the flight of a hornet, or by the cooing of a dove, and which was heard by the unassisted ear a foot from the patient's chest,—it was also noticed that a strong jarring thrill could be felt, by the hand placed on the sternum, during the diastole of the heart. In Dr Watson's second case, in addition to the ordinary symptoms of organic disease of the heart, it was observed that the second sound (the first being natural) "consisted in a long-drawn and very loud vocal note, audible to the patient himself, who (unprompted) compared it to the cooing of a pigeon;" it was louder on the right than on the left of the sternum. In this latter case, as in Dr MacAdam's, inadequacy of the aortic valves was, after death, ascertained to exist. A case apparently of rupture of the semilunar valves of the aorta is recorded in the 43d volume of this Journal, in which two strong bellows-murmurs obscured the usual sounds of the heart, and had their maximum near the top of the sternum, towards its right side. In this case it was also observed, that there was frequently an impulse accompanying the second sound, a diffused impulse over the upper third of the sternum, a distinct thrill occasionally to the right of this, and impaired percussion along the whole extent of the sternum. The case was, in consequence, very naturally mistaken for aneurism in the course of the ascending aorta. On examination after death the aorta was found perfectly sound, and two of its valves so torn from their attachments as to leave a large opening for regurgitation of blood into the ventricle,—while the impaired percussion, and diffused impulse, observed on the sternum, were found to have been caused by condensation of the anterior margin of the right lung, which, having been pressed upon by a considerable effusion into the right cavity of the pleura, was made to occupy more of the space behind the sternum than usual.

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* Edin. Med. and Surg. Journ. Vol. xxxvii.

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* On Diseases of the Heart, p. 340 † Arch. Gén. t. v. ii. Séries.

‡ Ibid. Mars. 1837.

One conclusion to be derived from the foregoing observations is, that we have yet no formula of diagnostic signs which can afford us a certainty that cases of incompetency of the aortic valves may not sometimes escape detection, even after the most careful and judicious investigation. In Dr Corrigan's enumeration of the signs, the second and third are nowise peculiar to the disease in question, nor do they add any significancy to the first. The "visible pulsation" of the arteries in the neck and superior extremities is a very important indication of a patent state of the aortic valves, when this sign is present *in a remarkable degree;* but that it is not always so my own experience has convinced me, and when it is not, the state of the pulsation of the vessels in this complaint cannot be satisfactorily distinguished from the full and bounding pulse of other diseases. The "bruit de soufflet," and "fremissement," in the large vessels during their diastole, depend either on valvular excrescences, or on disproportion between the quantity and velocity of the blood, and the orifice which transmits it. That Dr Corrigan should, in common with other physicians, have witnessed all these signs in cases of incompetency, is consistent with the pathological changes effected at the mouth of the aorta, for the valves are not unfrequently in such a state of disease that they are both patent before the reacting column of blood, and an obstacle to the egress of fluid from the ventricle. The error has consisted in associating the signs of the latter with those of the former condition, either of which may occur separately in different cases.

The murmur incidentally noticed by Dr Hope, as accompanying regurgitation from the aorta through patent valves, is, under certain restrictions, a very valuable distinguishing sign. The simple occurrence of a murmur instead of the clear second sound at the base of the heart is no evidence of patency of the aortic valves, since it equally attends contraction of either of the auriculo-ventricular openings. Could we, indeed, rely on its being always louder on that part of the chest immediately contiguous to the place at which it originates, and were we able to guess exactly the position of the several orifices of the heart, the murmur, as described by Dr Hope, would readily indicate its source. But experience has proved that the maximum of the murmur indicative of patency of the aortic valves is not uniformly at the usual situation of the root of the aorta, as stated by Dr Hope and M. Charcelay, for in Dr Watson's second case the murmur was loudest on the right side of the sternum. It is also highly probable that the remarkable increase in the size of the heart, commonly attendant on incompetency of the aortic valves, has the effect of altering the relations usually subsisting betwixt the several parts of the heart and the external surface. The murmur, instead of the second sound, which denotes imperfection of the aortic valves, is capable of being distinguished from that which results from narrowing of an auriculo-ventricular opening solely by its being chiefly audible in the course of the aorta, and its principal branches in the neck, while the murmur occasioned by the latter disease, although it may in some instances be considerably diffused, does not follow so distinctly the course of the vessels. The track of the murmur does not serve to distinguish patency of the aortic valves from an aneurism in the course of the aorta, which produces a murmur coincident with the diastole of the heart.* The state of percussion on the sternum and neighbouring parts, a remarkable phenomenon in the progression of the pulse hereafter to be mentioned, and other circumstances, require to be previously considered.

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* Edin. Med. and Surg. Journ. No. 127. "On the sounds afforded by substernal aneurisms."

This murmur, instead of the usual second sound, is not, however, all that is wanted to indicate incompetency of the valves of the aorta, for cases of this disease occur in which no such sound is present. Dr Corrigan, although he excludes it from his formula of diagnostic signs, allows that it is occasionally present, but limits it, I think with questionable propriety, to cases " in which the deficiency of the valves is considerable." That cases of the disease occur without this sign I have reason to believe, on the testimony of other competent observers in addition to Dr Corrigan, although in the several cases which have fallen under my own notice, a murmur attending the recoil of the arteries existed in the course of the ascending aorta, and usually more or less in its chief branches.

Of the several instances of this affection, amounting to four, which have recently occurred to me, all had one or more of the signs which occasionally characterize defective action of the valves, and, moreover, agreed in presenting a remarkable phenomenon in the circulation, which, as it appears to me necessarily to result from the mechanism of the disease, and the laws regulating the motion of blood in the arteries, I conceive it of some importance to recommend to the notice of those who have opportunities of extending the inquiry into its value. The sign to which I allude is a greatly increased interval between the systole of the heart and the pulse of the remote arteries, such as the radial. The concurrent testimony of Sœmmering, Wedemeyer, Magendie, Weber,[*] and many other physiologists, sustains the conviction which any one may derive from a scrutiny of his own circulation, that in a state of health there is some degree of succession in the arterial pulse, although Harvey, Haller, Spallanzani, and many others maintained as a fact universally true, that the arteries pulsate synchronously with the heart. This error, though easily tested and rectified, furnished Kerr, in his opposition to the Harveian doctrine of the circulation, with a powerful argument, had the fact been as Harvey had supposed. " The motion of a fluid," says Kerr, " propelled through elastic tubes, in diameter such as the arteries, and by a force much greater than that exerted by the heart, is still progressive, as may be ascertained by the fingers applied and also by the eye ; whereas the natural pulse of warm-blooded animals is instantaneous, and altogether, as Harvey observes, " quasi trajecto fulgure."[†] A similar observation must have occurred to all who reflected on the mechanism of the circulation, and have enforced at all events the *notion* of a necessary succession in the pulse, and accordingly Spallanzani says, "but although it is evident this successive motion must take place, it cannot be perceived, as the circulation is carried on with such astonishing celerity, that at the very moment when the heart contracts, the aorta, and the whole arterial system seem to beat at one and the same time." [*] From the difference of opinion which appears to have prevailed on the subject, it may be presumed, as is in fact the case, that the succession of the pulse is exceedingly rapid, and that the proper interval between the pulsations in any two parts of the body is very brief. This swift transmission of the shock communicated to one extremity of the column of blood in the arteries has been referred to the state of repletion, in which the vessels are maintained,—a condition universally admitted to be essential to the velocity of an undulation in fluids confined in elastic tubes. The necessary state of fulness cannot exist in the large vessels, when a quantity of the blood propelled into them recedes into the heart during each diastole of the ventricles, as must be the case when the aortic valves are incapable of exercising their function. Each succeeding systole of the heart propels the new wave of blood into vessels too much relaxed to admit of the onward pulse being transmitted with the usual velocity; and there results a remarkably increased interval between the beat of the heart and of the remote arteries. The increased interval in the several cases to which I have alluded was so great that the radial pulse exactly alternated with the systole of the ventricles, or occurred in the middle of the interval between the successive pulses of the heart. I have examined many persons affected with disease of the heart in different forms, and found this peculiarity of the pulse in none, except those in whom there were signs of defective action of the aortic valves. Those cases I relate minutely, that the probable accuracy of this diagnosis may be judged of, there having been but one examination after death to confirm the justice of the previous expectation. Three of the patients are, in so far as I know, yet alive, and the only additional information of any importance which could be wished for in the event of examination after death would relate to the degree of the incompetency of the valves. If the defect be to a small extent in those cases which exhibited so great a pause between the systole of the ventricles, and the pulse of the remote arteries, we should expect it in the case of a greater incompetency to be, if not more remarkable, at all events, not less so. But if the incompetency be very considerable in those cases, it is possible that in a small degree of the disease the retarded progression of the pulse may not be observable. Dr Corrigan has, indeed, stated that the murmur, with the second sound, which was present in these cases, is confined to instances of considerable deficiency of the valves, yet the statement does not appear to be founded on actual knowledge of the fact. In the absence of ocular proof, I may be allowed to state the grounds on which I found my belief, that at least in two of the subjoined cases the disease did not, when examined by me, exist in an aggravated form. The two to which I refer were characterized by a prolonged cooing, or musical note, in place of the second sound. So lengthened was this note, that, as in Dr Watson's cases, the inference is very natural, that the ventricle into which the blood that originated the note was receding became very gradually filled. Now this slow rate of filling could not have occurred if blood were rushing into the cavity at once from a large opening among the semilunar valves, as well as through the ordinary passage from the auricle. The inference is further supported by other circumstances in the history of Case II., to wit, the cessation of the musical note after the lapse of some months, and the occurrence in its room of a feeble bellows-murmur, not sufficient to denote patency of the valves, while at the same time the interval between the pulse in the region of the heart and at the wrist became reduced to its healthy state. From what causes this state of the phenomena resulted, it were needless at present to endeavour to determine. The evidence that incompetency of the aortic valves did exist at one time in this case is very strong, and the possibility of a cessation of this morbid state of the valves, we are not warranted in denying, when we have the assurance of M. Charcelay, that inflammatory turgescence of the valves is one cause of their incompetency; and when it may be reasonably presumed that their deficiency may admit of being compensated in some instances by the growth of excrescences, or formation of organized laminæ. The supposition may be justly hazarded in regard to the conditions of this case, that the deficiency of the valves, if great, was not likely to be remedied as it appears to have been.

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[*] Burdach, Physiologie, B. iv.

[†] Observ. on the Harveian Doct. p. 20.

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[*] Spallanzani's Experiments on the Circulation, p. 254.

Reflecting on the extent to which an aneurism appears to expand with every influx of blood, I apprehended, that, in the event of such a disease occurring in the substernal aorta, it might have the effect of retarding the progression of the pulse, and consequently of detracting from the value of this as a sign of patency of the aorta. Only one case of aneurism in this situation has occurred to enable me to determine this question, and in this instance, although a very extensive aneurism, occupying a large portion of the right side of the chest, and still pervious to blood, the pulse of the heart and arteries bore their usual relation to each other. Nor is it surprising that it should be so, when we remember, as Haller remarks, that the blood resumes its velocity after having passed an aneurism,—indeed, were it otherwise, the sac would necessarily undergo a permanent increase of size from every new influx of blood—and that the expansion of an aneurism at each pulsation probably is, as in the healthy arteries, more apparent than real.

In concluding this brief notice of incompetency of the aortic valves, it may be of use to sum up what appears to be warranted regarding the more prominent signs by the accumulated observations of different authorities.

1st. Visible pulsation, or remarkable leaping of the arteries of the head and upper extremities, is a very common attendant on the disease,—yet not worthy of being considered a pathognomic sign, because it is not always present in a degree of peculiar significance, may result merely from a greatly enlarged left ventricle (to which, indeed, M. Guyot attributes it in patency of the valves,) and may be caused by continued nervous excitement (Corrigan); nor is its true cause revealed by

2dly. Bruit de soufflet and fremissement, accompanying the diastole of the arteries, as maintained by Dr Corrigan, for the former of these may result from mere irritability (Hope,) and the latter is often absent altogether in cases of patency. These phenomena may also result from disproportion between an enlarged ventricle and the orifice of the aorta, and from vegetations on the valves.

3dly. A bellows-murmur, in place of the usual second sound, most audible along the track of the aorta and its primary branches, is an indication of patency of the aortic valves, except in those rare cases of aneurism in the course of the substernal aorta which have the power of originating two murmurs, (Edin. Med. and Surg. Journ. No. 127.) The musical or cooing note, in place of the second sound, has hitherto been found to originate only in cases of patency of these valves. The morbid murmur during the diastole of the heart, whether a bellows-sound or a sonorous note, may, contrary to the opinion of Dr Hope, be very loud in cases of incompetency of the valves. In some cases, however, there are no such sounds.

4thly. The occurrence of a preternatural interval between the period of the heart's contraction, and of the remote arterial pulse, promises to prove a valuable sign of inadequacy of the aortic valves. Should it prove on further inquiry to be constant, it will remove the difficulties in the differential diagnosis of patency.

5thly. The usually full pulse and tortuous state of the arteries are natural consequences of the great volume of the left ventricle, which, since the time of Haller, has been known to result from insufficiency of the semilunar valves. (Biol. Von. Trevir. iv.) The longer the continuance of the disease, the more remarkable these become.

Case I.—A. B. aged 42, a gardener, July 30, 1836. He states that he enjoyed good health till about three months ago. He then became subject to asthma or difficulty of breathing, which usually attacked him in the evening. After a short time he was liable to fits of palpitation, and pain, during the paroxysms, all over his left arm. For six weeks past his complaints have been particularly troublesome, and he is now unable to leave his room, and often spends the night without sleep, owing to the severity of his dyspnœa. Pulse 90, regular and firm; pulsation of the carotid arteries visible; and also of the radials, though less remarkably so.

In the region of the heart there are two morbid murmurs in place of the healthy sounds, of which the first is loudest. About the sternal extremity of the fourth rib the two sounds are louder and more superficial, and there is less difference between them. They are heard nearly equal in intensity, as far as the upper end of the sternum, and immediately above this bone they become of a deeper and hoarser tone, while at the same place there is some degree of impulse during the diastole of the arteries. The two sounds are audible on every part of the chest; in front they are less distinct on the sides than on the sternum, and are faint on the back. They are of the character of a harsh bellows-murmur, except in the space above the sternum, and in the carotids. In these vessels, the first sound is hoarse and distant, the second feebler than towards the region of the heart. Dulness of percussion extended in the precordial region. The pulse of the heart against the side is now and then energetic during the diastole, or with the second sound, while little more than an undulation is felt to accompany the preceding first sound; generally, however, the impulse occurs, as usual, during the systole of the heart. The first sound of the heart, and the pulse of the radial artery, alternate in the most distinct manner, as also do the beat of the heart and of the same artery, when the former marks the contraction of the ventricles. When, however, the impulse of the heart attends the second sound, it coincides with the radial pulse.

He died in a few weeks after. I was not present at the examination of the body, but am favoured by Dr Begbie, whose patient he was, with the following notice by the gentlemen who conducted the inspection. I may observe, that the writer of the notice was acquainted neither with the symptoms during life, nor with the diagnosis. "The heart was found nearly four times the natural size. The left ventricle greatly dilated, with a very slight thickening of the walls, which seemed softer than usual, so as to collapse slightly when cut into. The aortic opening seemed too large in proportion to the semilunar valves; the structure of the latter, however, was natural. The right ventricle was also dilated, but less in proportion than the left. The auricles were slightly dilated, their walls very thin. The pericardium contained three or four ounces of bloody serum. The cavities of the pleura contained a considerable quantity of serum, and were lined, especially in the vicinity of the heart, with a thick layer of lymph in various degrees of organization. The lungs were evidently congested with blood, but otherwise healthy. There was some œdema of the cellular membrane of the whole body."

CASE II.—J. P. a marble-cutter, beyond middle age, 4th June 1836. Some weeks ago this man had great œdema of the limbs, and much difficulty of breathing. By the influence of repose and moderate blood-letting, the œdema has been removed, and he has no dyspnœa except when moving about.

Attending the impulse of the heart, there is an obscure murmur, soon succeeded by a sonorous note instead of the usual valvular sound. The musical note is low but distinct. It is very well heard in the region of the ventricles; but less perfectly opposite the right ventricle, or at the base of the sternum, than in the situation of the left. At the cartilage of the fifth left rib, close to the sternum, it has its greatest volume. As the examination is extended upwards, it is found to become slightly diminished, yet is still quite distinct at the top of the sternum. In the carotids there is a deep, hoarse, saw-sound, accompanying the ventricular contraction, succeeded by a soft bellows-murmur. The apex of the heart beats at the sixth rib; impulse pretty strong; pulse occasionally intermits; is full and below 80. There is generally a considerable interval between the impulse of the heart and the arterial pulse at the wrist,—now and then this preternatural interval cannot be distinctly observed. * There is an unusual interval also between the pulse of the carotids and of the radial. There is permanent distension of the veins of the neck, and a pulsation in them synchronous with the systole of the heart. The carotid arteries exhibit the "visible pulsation" a good deal, and so do the radials.

In October of the same year, this man had an aggravation of his complaints, and was again relieved by means of cupping on

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* Whether or not this resulted from the impulse in the precordial region having occasionally attended the diastole of the ventricles, as in the preceding case, I did not ascertain, but am inclined to suspect it did, as no notice is taken of any such difficulty in distinguishing the increased interval between the beat of the carotid and of the radial arteries.

the chest, blisters, and other remedies. In the interval between this and his previous illness he had returned to his occupation, and found himself quite fit for work for several months, until at length, after continued exposure to inclement weather, his former ailments, dyspnœa, palpitations, and œdema recurred. After his recovery from these in the end of October, and several times subsequently, I examined the phenomena of the circulation. On the 19th October, I found the impulse of the heart considerably increased, especially in the region of the left ventricle. The pulsation of the arteries not remarkable. A murmur supplanted each sound in the region of the heart. The first was soft inferiorly, and not strong on any part of the chest, though gradually augmenting towards the summit of the sternum, while in the carotids it had a deep, hoarse, rasping character as before. The second murmur was considerably more prolonged than formerly, less developed, and feebly sonorous; so as to be remote and indistinct. It was still at its maximum about the level of the fifth cartilage. Pulse regular in general, intermitting but seldom, and not frequent, full, yet not immoderately so. The interval between the precordial and radial pulse was found, after an attentive examination of several minutes, not greater than in health.

Several subsequent examinations enabled me to ascertain a farther diminution in the second murmur, until it had become extremely insignificant,—the state of the pulse continuing as just noticed.

Diagnosis.—Eccentric hypertrophy, chiefly of left ventricle. Disease of the aortic valves. Probably a very small insufficiency when the valves are down.

Case III. J. H. aged 36, a brass-founder, May 1836. Of his previous history it was merely learnt that he had enjoyed in general good health, was little troubled with uneasiness in the chest until lately, and that the cooing sound, hereafter to be noticed, had been remarked by his wife a considerable time ago.

Percussion natural on both clavicles and on the chest generally. The precordial dulness extends much beyond its natural limits, commencing at the cartilage of the fourth left rib, and reaching nearly to the seventh, two inches and a-half below the nipple, thus describing a triangular space, with the left side of the sternum and the seventh rib, nearly four inches from base to summit. The murmur of respiration is obscure but not absent, save at the dull space just indicated. The apex of the heart strikes between the sixth and seventh ribs, two inches and a half below and to the left of the nipple. The impulse is moderate. A thrill synchronous with the diastole of the ventricles is felt on the lower half of the sternum. Previous to a recent blooding from the arm this thrill was felt along the whole sternum, and on the contiguous cartilages of both sides, and was much stronger than at present.

The first sound of the heart is of a duller character than natural, but is not otherwise changed. The second is replaced by a remarkably sonorous musical note, not unlike the buzzing of a wasp. This sound is very distinct at the point where the apex impinges against the side, and gradually augments towards the situation of the fourth cartilage, at the lower margin of which it is particularly strong. From this point across to the right side it undergoes occasionally a slight diminution in volume, and is rather sharper than elsewhere at the third and fourth right cartilages. It is very distinct along the whole sternum, but is loudest towards the middle of the bone, yet the difference is not great between its intensity at this point and at other parts of the sternum. Nor can it be decidedly ascertained at what particular spot the musical sound is permanently loudest, as it has about the same intensity at the fourth left cartilage, on the contiguous part of the sternum, and at the second, third, and fourth right cartilages. It now and then varies in intensity at particular places, being at one time strongest at the fourth right cartilage, and soon after either on the adjacent portion of the sternum, or at the fourth left cartilage. It is not so loud anywhere now as it was previous to the several blood-lettings lately performed.

On the right side, both in front and rear, the sonorous sound is louder in some measure than in the corresponding places of the left. In the carotids it follows, after a brief interval, the diastole of the arteries, and is loud, but less so than at the upper part of the chest. There is a very slight and brief rasping in the carotid and subclavian arteries, during their diastole, which is heard nowhere else.

Pulse 74, regular. It is sudden, and to a moderate degree visible in the neck. The pulse of the radial arteries distinctly alternates with the impulse of the heart, and first sound, the usual interval being greatly lengthened. There is considerable tenderness on the middle of the sternum and over the whole region of the heart.

Case IV. A. F. aged about 50, a porter, April 1837. Pulse 120, sudden and sharp. He has much breathlessness on climbing a stair or hill, yet he walks quickly when going messages—his usual employment. He experiences great relief to the oppression of his breathing, after fatigue, by drinking ale or diluted spirits.

The external figure of the chest is in nowise remarkable. The apex of the heart beats at the seventh rib, away to the left, much beyond its usual position. The impulse of the heart is extremely energetic, shaking the whole front of the chest as with repeated blows in rapid succession. The arteries of the neck beat with remarkable energy, leaping visibly forward. The impulse of the heart, and the beat of the radial arteries alternate almost exactly. There is not nearly the same interval between the beat of the carotid and of the radial arteries. In the situation of the ventricles there is a dull, rough, sound, intermediate in character between the bellows and rasping sounds, accompanying the impulse ; the second sound is very obscure and muffled. About the level of the fourth left cartilage there are two superficial sounds of the nature of a strong or harsh bellows sound. These sounds are heard up the sternum, and at the top of this bone, on the right side : the first has its greatest developement ; that of the other is nearer the fourth left cartilage, yet it is of almost equal intensity, for a couple of inches above this, and not greatly diminished even at the top of the sternum. In the carotids there is merely one deep, hoarse saw sound, synchronous with the contraction of the ventricles. The first bellows sound of the heart is heard faintly on the left posteriorly, and is barely audible on the right. In front both sounds are heard better on the right than on the left. He has been affected with symptoms of diseased heart for several years. Percussion is dull in the region of the heart over a triangluar space three inches in extent, commencing at the fourth rib. *

Edinburgh, July 1837.

Art. VII.—*Anatomical Description of the state of the parts in partial Luxation of the Shoulder-Joint, illustrated by engraved Figures.* By William Hargrave, M.B. Lecturer on Anatomy and Surgery in the Dublin School of Anatomy and Medicine, Digges Street.

As there are but few dissections on record of the condition of the shoulder-joint after luxations, either in the recent state, or at any lapse of time after their occurrence, I consider that the following case is not devoid of interest to the profession, particularly as it bears upon the contested question of incomplete luxation of orbicular articulations,— being a well marked example of incomplete luxation of the humerus, or the subcoracoid luxation of Sir Astley Cooper.

The subject which afforded the dissection was brought into my class-room prior to the passing of the Anatomical Bill. Being disinterred, I could not make myself acquainted with the history of the case. It was a small subject, between sixty and seventy years old.

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* Since the above went to press, a fifth case, with visible pulsation in the neck, a bellows murmur in place of the second sound, and increased interval between the pulse of the heart and radial artery, has occurred to me, and also a case, in a nervous female, of temporary visible pulsation and bellows-sound in the neck without this state of the pulse.

The appearance of the extremity instantly indicated the existence of a luxation, from the following well marked characters of such an accident. The limb was slightly abducted from the side of the trunk, the acromion projected in a prominent and well-defined manner, while the infra-acromial region presented a deep hollow, extending downwards towards the insertion of the deltoid, also in a transverse direction. By pressing my fingers firmly into the axilla, the head of the humerus was ascertained to have passed along the inner edge of the glenoid cavity.

On examining what motions the arm enjoyed, it possessed to a slight degree the *under-hand* motions, independent of any evident participation in them by the scapula; but when carried to any extent, the latter bone was decidedly concerned in them. Rotation either inwards or outwards was very limited, particularly in the former direction. Circumduction could not be effected, consequently the *over-hand* motions were annihilated.

Dissection.—When the integuments on the external part of the humerus were removed, the deltoid was found much elongated and flattened; and the *supra-spinatus* and *infra-spinatus*, also the *teres minor* muscles, embraced their respective portions of the capsule of the joint very firmly. On the axillary aspect of the articulation, the head of the humerus pressed against the brachial plexus of nerves, all of which were more or less separated from each other, and *very much flattened*, having completely lost their cylindrical appearance and form. The subscapularis muscle, as it passed over the neck of the scapula, was separated from that part of the bone, by the distance of nearly an inch, and the space occupied by a quantity of dense adipose substance.

On raising the deltoid so as to expose the capsular ligament, a small portion of adipose substance lay beneath it. When all the muscles which surround the articulation were removed, the capsule presented a perfect state of integrity, which along the superior and posterior part of the joint was very dense and strong, extending from the acromion process downwards and forwards to the humerus, and bore some similarity to the ileo-femoral ligament of the hip-joint; affording a very satisfactory explanation of the very limited motion of rotation inwards. [C]

When the capsule was opened on its internal aspect, the head of the humerus was seen to be in part external to the joint, and was divided into two unequal portions, by a deep groove, [F] extending for the entire length of its head, in a perpendicular direction. Of these two portions, the internal and larger one [*H*] passed a short distance beyond the corresponding edge of the glenoid cavity into the subscapular fossa, while the posterior and smaller one [H] remained in the glenoid cavity, occupying its internal surface. [G]

The groove now mentioned, fitted on the inner edge of the glenoid cavity, which did not present its usual well defined border, but was rounded off, so as to present a thick lip, from the constant pressure and frequent motion of the humerus upon it. The head of the humerus on its superior aspect was in close apposition with the coracoid process, and had altered in a remarkable degree its form, which, in place of being beaked and pointed, was much expanded, flattened, and slightly hollowed. [K]

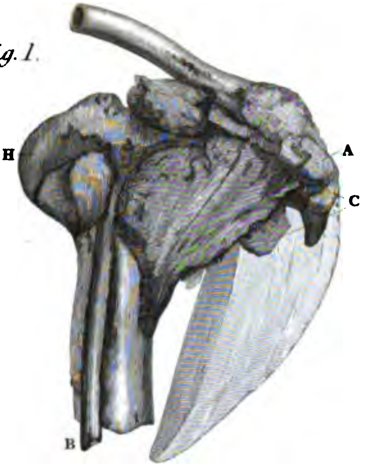
When the articulation was first opened the tendon of the long head of the *biceps* could not be seen, but on more particular examination, it was found to have been ruptured, the portion connected with the muscle being intimately attached to the bicipital groove of the *humerus*, while the portion belonging to the glenoid cavity was much diminished in size, and presented a mere rudimental character in the capsular cavity.

The example of luxation now detailed is, in my opinion, the best on record towards solving the question of partial luxation of orbicular joints, as the scapulo-humeral and ileo-femoral. The only two instances as yet offered to the profession that I can find are, one by Sir A. Cooper, the other in Dupuytren's Leçons Orales. In the case adduced by the first of these most experienced and practical surgeons, and whose authority affords great support to my opinion, as to the nature of this dislocation, it is stated, that "the tendons of those muscles which are connected with the joint were not torn, and the capsular ligament was found attached to the coracoid process of the scapula. When this ligament was opened it was found that the head of the *os humeri* was situated under the coracoid process, which formed the upper part of the new glenoid cavity; the head of the bone appeared to be thrown upon the anterior part of the neck of the scapula, which was hollowed, and formed the lower portion of the glenoid cavity.

"The natural rounded form of the head of the bone was much altered, it having become irregularly oviform, with its bony axis from above downwards; a small portion of the original glenoid cavity remained, but this was rendered irregular on its surface by the deposition of cartilage. There were also many particles of cartilaginous matter upon the head of the *os humerus*, and upon the hollow of the new cavity in the *cervix scapulæ*, which received the head of the bone. At the upper and back part of the point there was a large piece of the cartilage which hung loosely into the cavity, being connected with

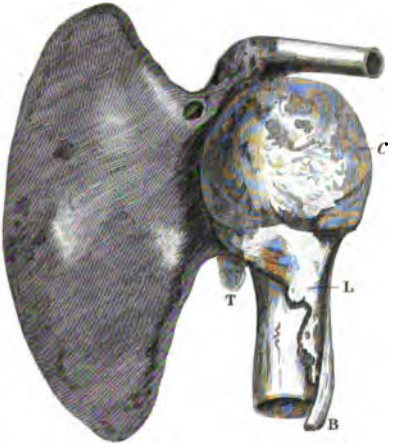
EXTERNAL VIEW OF THE ARTICULATION.

Fig. 1.



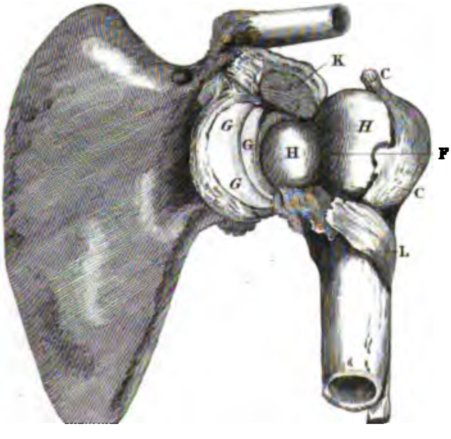
THORACIC VIEW.

Fig. 2.



VIEW OF THE ARTICULATION OPENED.

Fig. 3.



the synovial membrane at the upper part only by two or three small membranous bands. The long head of the biceps muscle seemed to have been ruptured near to its origin at the upper part of the glenoid cavity, for at this part the tendon was very small, and had the appearance of being a new formation."—*Cooper on Dislocations*, p. 409.

In the case recorded by Dupuytren, there was a false articulation, formed in part by the glenoid cavity of the scapula, and a small portion of the surface of the ribs. The head of the humerus was grooved to receive the anterior edge of the glenoid cavity, forming a kind of ginglymus. During life the arm enjoyed but slight degrees of motion backwards and forwards. The same practitioner mentions a case of partial luxation of the ileo-femoral articulation.—Vide Leçons Orales, Tom. iii. p. 105.

Such are the only authenticated histories that I can find of partial luxation of the shoulder-joint with their dissections. The case now presented to the profession affords a good example of this rare variety of dislocation, and not an old complete unreduced one, for the following reasons. 1. The perfect state of the capsular ligament. 2. The condition of the head of the humerus and glenoid cavity, each retaining so much of their original articulating surfaces perfect, and fully capable of performing their offices in the motions of the joint. 3. No laceration of muscular structure, nor of the tendons inserted into the tuberosities of the humerus. 4. The relations of the head of the humerus to the coracoid process of the scapula.

It may be asked whether the long tendon of the biceps was ruptured in the first instance, or did it occur after the accident. It is not easy to answer such a question. The same condition of the tendon occurred in the case by Sir A. Cooper; and I may observe on this point, that I have often found this tendon presenting the same appearance in very old subjects, in which no other lesion of the articulation existed.

Fig. 1. External view of the articulation.

H. Head of the humerus covered by the capsular ligament.

A. Acromion process.

C. Portion of the capsular ligament extending downwards and outwards, much thickened, and preventing rotation inwards.

B. Long head of the biceps.

Fig. 2. Thoracic view of the articulation.

C. Capsule embracing the head of the humerus.

L. Tendon of the *Latissimus dorsi.*

T. Tendon of the long head of the triceps extensor.

B. Tendon of the long head of the biceps.

Fig. 3. View of the articulation opened.

K. Coracoid process flattened, expanded, and hollowed.

G. Old glenoid cavity.

G. New glenoid cavity.

H. Small portion of the head of the humerus which played in the original glenoid cavity.

H. Large portion of the head of the humerus which moved in the new cavity.

F. Perpendicular groove dividing the head of the humerus.

L. Tendon of the *Latissimus dorsi.*

C. Part of the capsule.

B. Tendon of the biceps.

ART. VIII.—*Remarks on the Objections recently made to the performance of Extraction in Cataract by Dr John A. Robertson.* By PATRICK GEORGE KENNEDY, M. D.

MY object in the following paper is to consider the validity of the objections which have been urged by Dr Robertson, in a late Number of the Journal (131,) against the performance of extraction in cataract.

Though I have not enjoyed the opportunities which Dr Robertson has, of testing by personal experience the relative success of extraction and displacement, I may be allowed to state that the greater part of my time and attention since I entered the profession has been devoted to the study of ophthalmic surgery, and that I passed several years abroad, following the practice, and profiting by the experience, of the most eminent continental oculists; Jaeger and Rosas of Vienna, Graefe and Jungken &c. in Berlin, who invariably perform extraction when any choice is left them.

Dr Robertson's first objections are, that the iris is apt to fall forward, and get under the edge of the knife in its passage through the anterior chamber,—that in many instances the knife cannot be extricated, and the operation must either be relinquished, the iris cut, or the knife withdrawn, and the section completed with the scissors; by any of which the organ will be materially injured, and violent inflammation will be apt to ensue.

Now why is the iris apt to fall forward? Simply because the surgeon allows the aqueous humour to escape before he has completed the section of the cornea. Instead of this, if he were to pass the knife forward, rapidly and steadily through the anterior chamber, restraining the motion of the eyeball, by placing the extremity of the middle finger of the hand with which he depresses the lower eyelid, opposite the point where the instrument pierces the cornea, and if he were to ascertain before commencing the operation, that his instrument is sharp, well-tempered, and of the proper shape, that is, convex on both surfaces, so as to be capable of exactly filling up the wound it inflicts; and, above all, if he possess that confidence in his own dexterity which is essential to success, and without which the attempt would be as absurd as unjustifiable, the escape of the aqueous humour will be impossible, and the iris, instead of falling forward, will be retained *in situ*, by the steady pressure of the surrounding fluid. But if the surgeon neglect to restrain the motions of the eyeball, if, after piercing the cornea, he hesitate an instant in carrying the knife rapidly and boldly through the anterior chamber, or if the knife, instead of being convex, be flat on both surfaces, and incapable of filling up the wound it inflicts, the aqueous humour will certainly escape, the iris fall forward, and the operator find himself in the dilemma which Dr Robertson has described. But even here if his presence of mind do not forsake him, he may still avoid cutting the iris, not by attempting to extricate the knife, but by holding it steadily for a moment, pressing with the point of the index finger on the cornea against the entangled part of the iris, and while he makes this pressure, passing the knife steadily forward, and completing the section, (see Mackenzie, p. 731,) when he will find the iris retracted and uninjured. I apprehend that the operation ought in no instance to be left uncompleted, even if the operator should have had the misfortune to allow the aqueous humour to escape too soon, and be ignorant of the easily executed manœuvre just described; because a simple incised wound of the iris often heals by the first intention, without being followed by any bad consequences. Half the danger resulting from the operation has already been incurred, and in general the patient will not be induced to submit to a second attempt after the failure of the first.

The most frequent cause of failure in extraction is not any violent injury done the organ during the operation, but its having been had recourse to in cases, which, from constitutional or local affections, were unfit for the operation. This will fully account for the unfortunate results of extraction in the hands of some dexterous and experienced surgeons, as Roux and Dupuytren, who rarely inquired into the previous history of the patient; and will also explain the success of the German oculists, who never perform the operation without having first carefully ascertained the nature of the cataract, the existing local or general complications, and the peculiarities of the patient's constitution. The success of the operator depends not only on manual skill and dexterity, but very materially on his intimate acquaintance with the diseases of the organ on which he operates.

In Germany, which may be considered as the fatherland of this department of surgery, and where clinical chairs of ophthalmology exist in every university, and regular operative courses of ophthalmic surgery must be practically followed by the student, fewer failures occur after extraction than after reclination. Dr Robertson himself tells us that Graefe of Berlin cured 18 out of 19 cases by extraction, and failed in 2 cases out of 14 where he displaced, while Rosas failed only in 3 out of 26 cases where he extracted. To this I may add that during the time that I followed the practice of Jaeger of Vienna, and Jungken of Berlin, who, as I have said, prefer extraction to reclination, the operation was in no case unsuccessful.

The table given by Dr Robertson of the comparative success of the two operations does not give a fair view of the subject. Of the twelve operators whose authority is adduced to condemn extraction, nine are French. Now we know that in France, until very lately, ophthalmology attracted little attention; that the study of diseases of the eye was very much neglected; and that no institution of any kind existed for the cultivation of this important branch of surgery. The French, therefore, have been most unfortunate in extracting, because they did not possess the qualifications necessary to constitute successful extractors.

Dr Robertson's second objection amounts virtually to this, that, if the operator has a bad knife, he will bungle the operation. That I may not be accused of misinterpretation I give his own words. "If the cataract knife be not well-tempered, and its point very sharp, or if the cornea be unusually hard, the point of the knife bends towards the iris, so that the operation cannot be completed without a change of instruments, by which also the organ is apt to be injured, and the danger of the subsequent inflammation increased.

Now I do not believe in the existence of a cornea so *unusually* hard that sharp and well-tempered steel will not pierce it. But granting that the cornea could be in such a condition, it would be a radical objection to the performance of extraction, and, therefore, it ought not in such a case to be attempted.

The third objection is the weakest of all. It is as follows,—"The incision of the cornea being completed, if pressure be made on the eye, or if the muscles of the eye contract powerfully, the whole or part of the vitreous humour may be discharged. If the whole, the sight is irrecoverably lost, if a part, the hyaloid membrane in the cells of which the vitreous humour is contained, necessarily intervenes between the lips of the incision in the cornea, preventing or retarding their union. Attempts to replace the hyaloid membrane by the probe commonly call into action the muscles of the eyeball, by which a still greater portion is protruded."

Now if undue pressure is made on the eyeball after the completion of the section, it must be the fault of the assistant, for all that he has to do at this stage of the proceeding is simply to let fall the upper eyelid, and allow the eye to recover from the first shock of the operation. The eyelid is then to be gently raised, drawn away from the eye, and fixed on the orbital region of the frontal bone. The needle is next to be introduced, and the capsule freely incised, after which the lens gradually disengages itself, passes slowly through the pupil, and presents itself at the external wound, when its further progress may be assisted by Daviel's spoon. If the capsule be freely opened by the needle, it rarely becomes necessary for the operator to employ any pressure for the extraction of the lens. In cases, however, where the lens adheres preternaturally to its capsule, gentle and steady pressure must be made with the convex surface of Daviel's spoon, never with the finger; and the immediate closure of the eyelids after the escape of the lens will generally prevent the vitreous humour from following. In such cases, however, reclination is the proper operation.

I agree with Dr Robertson in thinking that if the whole vitreous humour should be lost, the sight is irrecoverably lost; but he must have frequently seen a considerable quantity of it escape without any bad consequences ensuing. Nay, some operators consider a loss of part of the vitreous humour as rather favourable than otherwise to the subsequent recovery of their patient; because they believe that the intensity of the inflammatory action following the operation is thereby diminished. But even if a part of the vitreous humour should escape, the hyaloid membrane does not necessarily interve between the lips of the incision in the cornea, for in such cases the cells are generally ruptured, and the humour escapes, leaving the hyaloid membrane *in situ* behind the iris. Granting, however, that the hyaloid membrane (from the excessive action of the muscles of the eyeball) does in some cases protrude, any attempts to replace it must be highly improper, for, as Dr Robertson observes, they commonly call again into action the muscles of the eyeball, by which a still greater portion is protruded. I have seen cases in which this accident has occurred, where no attempts were made to replace the protruding portion, but where the eyelids were carefully closed, the patient put to bed, and all motions of the head and body interdicted; and on looking at the eye on the sixth day after the operation, the hyaloid membrane was found to have retracted, the lips of the wound were united, and the anterior chamber full of aqueous humour. In cases where the patient is nervous or excitable, and dreads the operation, and where, consequently, the eye is unsteady from the efforts made to elude the knife of the operator, there certainly is a risk of the vitreous humour being discharged simultaneously with the lens.

The operator will here find occasion for all the tact and delicacy which he possesses in handling the organ. He must avoid completing the section of the cornea too rapidly, and even in some cases leave a small bridle to be divided with the scissors, after the patient has recovered from his first alarm. The occurrence of this accident may thus even in the worst cases be avoided.

Dr Robertson's further objections to extraction are, that the whole vitreous humour may escape on completing the incision of the cornea, from spasmodic contraction of the muscles of the eyeball, or a disorganized state of the cells containing the humour. I have frequently seen spasmodic contraction of the muscles of the eyeball occurring, when repeated attempts were made with a hook or needle, or by pressure, to extract a cataract which had contracted preternatural adhesions, or when the lens could not disengage itself in consequence of the capsule not being freely incised. But this accident in properly selected cases must be very rare indeed, and when dreaded, the precaution already mentioned will prevent its occurrence.

The escape of the vitreous humour after section of the cornea has been completed, in consequence of a disorganized state of the cells containing it, proves that it was not a suitable case for the operation. It is the duty of every surgeon to ascertain, previously to performing extraction, whether the vitreous humour be fluid or not, and this he can easily do by comparing the elasticity and firmness of the diseased with those of the healthy eye. If the eyeball feel preternaturally firm and hard, the vitreous humour may be pronounced to be in a fluid state, and recourse must be had to another operation.

I now approach a delicate part of my subject, the examination of the results of Dr Robertson's personal experience.

Of 179 cases of hard cataract without any complication, 115 were operated upon by displacement, and 64 by extraction. Of the former, 94 were cured; of the latter, only 32, or exactly one-half.

This is certainly a startling statement, and it would be impossible to blame Dr Robertson, if such be the result of his personal experience, for abandoning the knife, and operating exclusively with the needle. I am inclined to believe, however, that Dr Robertson has been mistaken in conceiving that no complication existed in the 179 cases alluded to. My reason is, that in eight cases the result of the operation is stated to have been amaurosis. Now Dr Robertson must know that the occurrence of this affection, as a consequence of extraction, is exceedingly rare, and I have in vain searched for an instance of it in the recorded experience of Baer, Mackenzie, Lawrence, and Jungken. I do not, however, deny the possibility of its occurring; but I think it highly improbable that it could be 8 times the cause of failure in 32 cases. It appears to me more probable that in most, if not in all, of these 8 cases, a complication of hard cataract with amaurosis existed previously tŏ the operation. The existence of this complication is certainly not an insurmountable objection to the performance of extraction; for after the removal of the lens, the retina being again subjected to its natural stimulus, and excited perhaps by the inflammatory reaction which follows the operation, may recover its lost or impaired functions. But Dr Robertson, unless he was ignorant of the complication, ought not to have classed amaurosis with suppuration and atrophy of the eye-ball, opacity of the cornea, and other sequelæ of extraction.

I have now considered the objections which Dr Robertson has urged against the operation of extraction, and I think that, on close examination, they will be found virtually to amount to the following:

1*st*, That the operator may be incapable of performing extraction.

2*d*, That from negligence he may be provided with a bad knife, and allow the aqueous humour to escape before he completes the section of the cornea; in which case, if the operator be ignorant of the easily executed manœuvre already mentioned, he will inflict a simple incised wound on the iris.

3*d*, That, from ignorance or want of skill, dangerous or unnecessary pressure may be made upon the eye during the operation; or that, from a want of sufficient knowledge of the diseases of the vitreous humour, the operator may extract when it is in a fluid state, and the operation consequently inadmissible; in either of which cases the eye-ball will empty itself, and the operation be followed by total loss of vision.

All the accidents, therefore, which are apt to occur during the performance of the operation of extraction may be foreseen and prevented, and are at all times under the command of the surgeon.

The objection, that even after the successful performance of the operation, vision may be lost in consequence of the intensity of the inflammatory reaction, may be answered by the consideration that such patients are constitutionally unfit for it.

All Dr Robertson's objections are in fact mere cautions, which must be given to every beginner,—difficulties which every one will have to encounter in his first attempts in this department of operative surgery, and which a little practice and perseverance will soon enable him to surmount.

In concluding these remarks, I beg to offer a few simple propositions which may in part be looked upon as natural deductions from the preceding observations.

1st. Abstractedly considered, no particular operation for cataract is superior to another, because the forms which the disease assumes are so essentially different, and its complications with other ophthalmic and constitutional affections so numerous, that it is impossible to treat successfully all cases by any one particular plan.

2d. The surgeon must therefore be able to apply each operation to those cases to which it may be suited; and the circumstance of extraction requiring the greatest degree of skill and dexterity can form neither a valid objection to its performance, nor an excuse for its non-performance, where the case may demand it. Jungken very justly observes, (see p. 814 of his Augenoperationen) " the surgeon who devotes himself peculiarly to ophthalmic surgery and operations on the eye, must possess sufficient dexterity to execute each operation equally well,—if he does not he should forego operating entirely."

3d. When the case is one which leaves a choice to the surgeon, whether he shall perform reclination or extraction, the latter is to be preferred, because, as I have already shown, no objection to its performance is valid, and it is admitted by those to whom I am opposed, that, but for their supposed objections, it would be preferable.

4th. It is absolutely necessary for the success of the operation in question, that the patient's constitution be sound, his general health good, and the eye, with the exception of the simple structural and functional alterations attendant on cataract, perfectly healthy. The time of life at which the operation is most likely to prove successful is between thirty and seventy. Under thirty, the eye may fall a sacrifice to too violent inflammatory reaction, and above seventy, the age and exhausted vitality of the patient prevent the employment of the proper means to check its progress and intensity.

ART. IX.—*Medical Observations upon a form of Dysentery, known in the Island of Trinidad by the name of Bische or Biecho, illustrating the therapeutic effects of lime-juice and lemons.* By JAMES LYNCH O'CONNOR, M. D., Assistant Surgeon on the Temporary H. P. of the Royal Artillery. (Communicated by Dr WILLIAM FERGUSSON of Windsor, with Supplementary Remarks and Notes by the same.)

THE accompanying paper, from the pen of my friend, Dr

Lynch O'Connor of Trinidad, to which I have added a few remarks of my own, may probably be deemed worthy of a place in the Edinburgh Medical and Surgical Journal, as being descriptive of a formidable type of malignant dysentery, and illustrative of the efficacy of a class of remedies in its treatment, against which so great a prejudice has been entertained, as to make them very generally to be believed the prime cause of the disease, which they have in the instance before us, been found the best calculated to remove. The paper was read several years ago before the Medical Society of Windsor.

Dr O'Connor writes, as follows.

I met the first case of this disease in 1817. The subject of it was an Indian (Mestiza) girl of about 10 years of age, a servant of Mr Beyer, one of our most respectable planters, the intimate friend and counsellor of General Picton. She was then three days ill, and I was informed that the first two days she had violent and constant irritation of the stomach, with relaxation of the bowels, and for which symptoms she was then under treatment, when fortunately an old experienced nurse was called into her assistance, who discovered that the disease was the Bische, and accordingly administered the usual remedies, consisting of suppositories made of limes *(Citrus medica acida, Citrus Limetta,)* soot, and other useless farrago; with strong lemonade for common drink.

Four hours before my first visit, this mode of treatment was commenced, and I was informed that the irritation of stomach had considerably subsided, and that there was a considerable abatement of fever. I found her pulse scarcely perceptible; the skin cold and clammy, and the vital powers appeared to be sinking fast. The *sphincter ani* was so relaxed, that a suppository of the size of a pullet's egg was introduced into the rectum with the greatest ease. I had not the slightest hopes of her recovery from the disease, though the family expressed themselves perfectly satisfied as to the favourable termination, asserting as a reason, that, now the disease was discovered, the remedy was certain under these circumstances. I patiently awaited the effects of these indigenous remedies; and the case terminated favourably on the eighth day, although, from the extreme debility the patient was reduced to, the convalescence was protracted.

On inquiry respecting this singular disease, I could obtain no satisfactory information, except that lime juice was a specific in its treatment, and that, unless it was freely used by the mouth as well as *per anum*, it would inevitably terminate fatally, from the third to the seventh day; so much so, that whenever any of the natives, particularly Spanish, are ill, they consider it necessary to have the anus examined directly.

From 1816 to 1823, I had no opportunity of again seeing this disease in its confirmed state, although I frequently used the lime suppository as a prophylactic in diseases of the bowels, whenever there was any marked irritation about the lower parts of the rectum or the stomach; and in malignant dysentery I have known this mode of treatment, as used for the cure of the Bische, very advantageous; and even in lientery, I have seen in those climates much temporary benefit derived from the same remedy.

On the 24th July 1823, I was requested to see a negro slave of the Belle Plaine estate, an adult robust man of a healthy constitution, and about 26 years of age. He said he had been only two days ill, and entered the hospital that morning. As I saw this negro apparently in perfect health on the 22d, I was astonished to find him then in such an emaciated state. He was labouring under great mental depression, and expressed his conviction that the disease would terminate fatally, for that he had neglected the Bische, and he was certain nothing could save him under these circumstances. His pulse was 130, scarcely perceptible; the skin cold and covered with a profuse clammy perspiration; the countenance dejected; and the alvine and urinary secretions coming off involuntarily, the former with much blood and mucus. On examination of the anus, the sphincter was completely relaxed; and I cannot give any more shocking idea of its appearance, than by comparing it to the sunk eye of a dead animal in an advanced degree of putrefaction. The suppository of lime juice was freely used for twelve hours without any effect, and the disease was rapidly advancing,—the poor man suffering most excruciating pain. I recommended him half a grain of *extractum opii*, and seven grains of calomel every fourth hour, with an injection consisting of thin arrow-root and two drachms of laudanum, assisted by camphorated fomentations to the parts affected, and the introduction of lime juice and charcoal suppositories. Brandy punch was given for common drink, and as much farinaceous food as would sit well on the stomach.

25th. He had passed a restless night, and suffered excruciating pain in the lower part of the rectum. After having taken thirty-five grains of calomel, and three of *extractum opii*, as well as half an ounce of laudanum by injection, he refused to take any more medicine. He wished to have a Spanish nurse, in which he was indulged. The remedies she applied consisted of soot, limes, and some astringent bark (Toco) in suppositories.

26th. Is considerably worse. The anus had sloughed, and the sphincter and *levator ani* were partly destroyed, as well as a considerable portion of the cellular membrane about the perinæum. The nurse poured upwards of a pint of lime juice and water into the rectum with as much facility as into an empty funnel. As the pain was very acute, he was ordered thirty drops of *vinum opii* disguised in his wine, every hour, until some relief from pain was obtained.

27th. Is sinking rapidly; pulse scarcely perceptible; has no tension of the abdomen; complains still of the gnawing pain in the rectum; mental faculties are perfect; looks forward to death as his only relief, which he anxiously awaits. The space from the scrotum to the *os coccygis* is one foul ulcer, of the appearance of an ill-conditioned amputated stump of the thigh, in an incipient state of gangrene. The unfortunate man is lying on his belly, and you can see several inches into the cavity of the abdomen; in fact, language is inadequate to express the insidious and rapid progress of this horrid disease. Opium has had no effect either in diminishing the pain or promoting sleep, and, to use the patient's own words, "I am eat up by the Bische, and he is so hungry that he never stops day or night, and when he stops, he and I die together." He died at nine o'clock A. M.

As the estate was a considerable distance from Port of Spain, I had no opportunity of examining the body for twenty-six hours after death, and then it was in an advanced stage of putrefaction; from which circumstance I could not obtain any useful information, except that there were no worms; and I was reluctantly compelled to give up further examination of the body.

This disease is attributed by the natives to an insect, which is believed to lay its eggs in the rugæ of the intestines, when the patient evacuates his bowels in the wood or jungle; but this I am induced to deny.

From never seeing any proof of the insect, I think it is a species of dysentery commencing in the rectum, and confined to the lower intestines, which, being discovered at its first commencement, its progress is easily checked in a similar way to gonorrhœa or ophthalmia; but if once the disease is communicated to the neighbouring parts, which, from their cellular structure, are prone to assume that diseased action called *erysipelas phlegmonoides*, (the destructive progress of which is so ably described in Dr Thomson's Lectures on Inflammation, pages 512–13), the disease will terminate fatally.

It is worthy of remark, that, although diseased and debilitated constitutions are most liable to attacks of this complaint, the above case is a marked exception. It appears principally amongst the African and Indian race. I have met only one instance to the contrary. He was an English half-pay officer, who had the disease in its incipient state, which, no doubt, had it been neglected, would have degenerated into the malignant form, though it rapidly yielded to the application of lime-juice.

But I must further observe, that, whenever I met, in my practice, bowel complaints of an aggravated nature, I invariably made use of lime-juice freely, if the evacuations contained either blood or mucus; a mode of treatment generally adopted by the most experienced practitioners in this colony, where dysentery is very prevalent, particularly among the negroes and free labouring classes. The latter hardly ever use any medicine in which lime-juice is not the principal ingredient.*

,Jas. L. O'Connor, M. D.
Port of Spain, 1*st August* 1823.

I should think that no medical man would consider the foregoing to be any thing else than malignant dysentery, and that the negro story of an insect producing such symptoms is undeserving of any notice. I can offer my own testimony to having seen the rectum similarly affected under that dreadful form of the disease in our military hospitals in Flanders as far back as the campaign of 1794, and subsequently in different parts of the world, even on board ship, where exposure to the exciting cause alleged by the natives of Trinidad must obviously have been impossible. Unfortunately, in these shocking cases, we had then no knowledge of the remedies now proposed, and all of them perished miserably.

It would appear, therefore, that we shall owe to the Spaniards our emancipation from the prejudice against the use of ripe fruits in dysenteric affections.

Some writers among ourselves, even as long ago as the times of Pringle in the war of 1746, have ventured to recommend ripe grapes in dysentery, (a practice of which I have in my own person experienced the benefit); but they have uniformly been beaten down by the universal cry against apples in Devonshire, oranges in Portugal, limes in the West Indies, and fruits everywhere. The strawberry, the gooseberry, and even the more justly to be suspected cherry, however immoderately used, have been an exception to this outcry amongst ourselves, escaping blameless; because these, the earliest of our summer fruits, have in fact passed away, as will presently be seen, before the season of dysentery comes on. The Spanish physicians, however, have long adopted the juice of lemons into the list of their remedies, and I can speak to its safety,—I may say to its efficacy. The late Dr Cabbel, a most promising young physician on the Staff of our Army in the Peninsula, on his returning from Spain into Portugal, in the year 1811, was so much struck with what he had seen in the former country, that when severely attacked by dysentery at Coimbra (then one of our principal hospital stations), and attended by myself, he rejected all remedies but lemons and oranges. He speedily recovered, and I afterwards saw him follow the same practice in the hospitals, and among his private patients, with as much apparent success as attended any of the other modes of practice then in vogue.

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* In subsequent letters, Dr O'Connor brings forward strong additional testimonies of the efficacy of lime-juice in all dysenteric diseases of Trinidad.

Dysentery has prevailed in a considerable degree amongst ourselves during the two last autumnal seasons, and, as usual, the autumnal fruits have been blamed as the cause; but if ever there was a disease arising out of atmospherical temperature alone, dysentery is that one; and a man can no more be seized with true dysentery from any thing he can possibly eat or drink, than he can be taken with pneumonia, ague, or catarrh.

Atmospherical vicissitudes have been most truly said to be the cause; but they are not the whole of the cause; for the previous endurance of a steady high temperature for a considerable length of time is indispensable to its production. Thus between the tropics it is ever present;—in the warmer countries of Europe it is a late summer and autumnal disease; among ourselves, we only see it at the close of our hottest seasons; while during the short summers of the higher latitudes, whatever may have been the casual abundance of their summer fruits, or however rapid the alternations of temperature from extreme heat to piercing cold, it can scarcely be called into existence.

In some of the northern provinces of Sweden, where I happened to sojourn during one of the hottest summers ever experienced, the dry ground was literally covered with the wild strawberries, and the marshes afterwards filled with the whortle and cranberries; yet I never even heard of dysentery, though so great was the short-lived heat, that the thermometer was ascertained to have risen as high as 90° of Fahrenheit in the shade on two successive days; and so immoderate the desire of the inhabitants for acid fruits, to counteract the effects of their scorbutic winter diet, when no vegetables could be found, that they sought for, and devoured with avidity, even the berries of the mountain ash, as well as every other production of that kind.

Like fever it has been termed an endemial disease; but, properly speaking, it is as little so as possible; and the marshy alluvial lands of hot countries, so prolific of malarious fevers, are no further productive of dysentery, than as they may furnish in a greater degree the chilling night vapours which are its immediate exciting cause. The cold, however, is the agent here, and not the miasma; for the same night chill will just as surely induce it on the deck of a ship navigating the tropical seas, or on the driest sands of Egypt, as in the most swampy quarters of the West Indies.

I am far from pretending to deny that the abuse of even the wholesomest fruits will not occasion diarrhœa, and that bowels weakened by previous disease may not become more liable than they would otherwise be, to fall under the influence of any epidemic that is peculiar to them; but diarrhœa is not dysentery; so far from it, that when in treating dysentery we can induce diarrhœa, (that is bilious and feculent evacuations,) through the effect of our purgative or mercurial remedies, we have in fact cured the disease, or at least gained the most important step towards its cure.

I believe, therefore, that the free but not immoderate use of fruits, by assisting to keep the bowels soluble, is at all times a preservative against dysentery; and that when the disease is present, the same use is not only harmless, but, as in the case of the Bische in Trinidad, may furnish a most important remedy towards the cure. For if we examine the dismal records of this scourge to our fleets and armies, we shall find that its worst ravages have been seen amongst the famished garrisons of besieged towns, or in ships remote from land, while navigating the tropical seas, or in barren encampments where fruits could not be found. But so strong is the bias for tracing our diseases to any supposed source that may be obvious and familiar, instead of seeking for the more remote and occult but true cause, that every attack of illness is attributed to some adjunct or concomitant circumstance of little importance, more especially to errors in diet and catching cold. Thus the starving troops, in such places where they could neither procure fruits nor wine to lay the blame upon, have always detected some noxious quality, (for it must be from something they have swallowed,) in the water of their wells, which gave them fevers, or dysenteries, as the case might be; but if the very worst water, in every sense of the word, could bring on these diseases, our marine population, instead of being the healthiest body in the world, ought to be annually annihilated by them; for they drink none but putrid water, and insist that the very best of that kind is the water of the Thames taken in at London Bridge. What, besides, would become of the inhabitants of London itself, who live in the healthiest capital, and drink the dirtiest water in the world, and that, too, with apparent impunity. No one can doubt that water impregnated with deleterious ingredients must engender chronic glandular endemic diseases; or that diarrhœa, worms, and other derangements of the intestinal canal must ensue from alluvial contaminations of this necessary of life; but dysenteries or fevers never. Famine, and not fruit, was the predisposing cause of the dreadful dysentery that several years ago devastated the Irish poor in Dublin; for in their starving state, fruit, even if it abounded, was a luxury they could not procure.*

To talk of the contagion of dysentery, once so universally believed, would be ridiculous in the present state of our experience and knowledge.† Every one who has been compelled to witness its ravages in our armaments, knows well that there can be no inherent specific contagion belonging to it; although every one must equally acknowledge how possible it is, in over-crowded, ill-ventilated hospitals, to propagate a typhoid contagion under the form of dysentery, or with the leading shape and features of the prevailing epidemic, whatever that may be;—but that, under other circumstances, its propagation through personal intercourse is impossible; for the material of contagion, the typhoid principle, the septic poison, or by whatever other name it may be called, is too certainly generated, whether in the confined dwellings of the poor, or in crowded hospitals, whenever there exists an undue accumulation of human effluvia, more especially from bodies under a state of disease; and hence the numberless histories we have all read of contagious catarrhs, pleurisies, ophthalmies, ulcers, and even of contagious scurvies, &c.

One word respecting the general treatment, and I have done. This is, that of all the plans offered for the cure of dysentery, the mercurial is unquestionably the best; not only because, through its alterative accumulative power, it supersedes almost every inflammation that is not too rapid in its course to be overtaken by any but the speediest remedies; witness the hepatic, the syphilitic, the rheumatic, the iritic, and other inflammations; but because all the common forms of mercury can be made to coalesce most advantageously with the anodyne, the sudorific, or the depleting auxiliaries, or even with the citric acid through the aid of opium, and still better if the skin be chosen for the medium of its introduction.‡

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* Vide Medical and Surgical Quarterly Review, for June 1823.

† In a principal division of our Peninsula army, of which I held the medical superintendence in the year 1813, all the medical officers both of the British and Portuguese staff, comprehending a numerous body, were called upon to state their opinion on this point. One only expressed his decided conviction of the contagious nature of dysentery; but two others expressed an equally firm belief in the contagion of ague and *phthisis pulmonalis*,—thereby showing in the case of the two last, that when contagion or any other infectious fear pervades men's minds, converts may be found to any opinion whatever.

‡ The nitric acid combined with opium has been deservedly esteemed an excellent remedy in several stages of dysentery; and the tartaric acid, under the form of supertartrite of potash, when administered in the largest doses, was found to be a remedy not inferior to mercury itself in the dreadful dysentery of Dublin, formerly quoted in this paper.

On the foregoing judicious and pointed remarks of our esteemed correspondent, Dr Fergusson, it may be superfluous to make any observations. But it may not diminish the value of his arguments as to the therapeutic influence of acid fruits in dysentery, if we add that the strongest testimonies in favour, not merely of the innocuousness, but the beneficial influence of vegetable acids in general, and of lemon-juice and grapes in particular, are given by Dr Degner of Nimeguen, in his account of the Dysentery of that town, in 1736, so far back as 100 years; and by Dr Zimmermann, in his valuable treatise on the Dysentery in Switzerland in 1767, seventy years ago. Dolacus had previously found a mixture of lemon-juice and oil highly beneficial, and states that he had cured with this medicine above a hundred persons afflicted with dysentery. Dr Degner recommended strongly the copious use of lemon-juice, and the employment of the Moselle and Rhenish wines, where wine was indicated, because these were acid. As the work of Dr Zimmermann is now rather neglected, it may be useful to see the manner in which this author attempted to eradicate what he conceived to be a groundless prejudice.*

" A much more agreeable remedy, but which, in consequence of a generally received, though very silly notion, was looked upon as a real poison, was made trial of with the same good success. Dr Keller, an ingenious, careful, and extremely discreet young physician, at Weinfeld in Torgaw, had not only had an opportunity to vindicate the innocence of grapes and fruit, with respect to our dysentery, but even to experience in the clearest manner, their prodigious use in the cure of this dysentery.

He began with a child a year and a-half old, which had been harassed with the dysentery for the space of eight days, in a miserable manner. Whatsoever artifice was employed, it could not be brought to take the least medicine, had already had several convulsions, and appeared to be very near its end. The parents in the greatest distress, begged of Dr Keller in the most urgent manner, to try every thing in the world to save their child. He advised them to give it grapes: the parents fears for its death, got the better of their prejudices, which might otherwise have occasioned it; the child eat two grapes in the evening, and slept very sound the whole night. The next day they gave it more grapes, and after having eaten a great many of them during the space of eight days, it got perfectly well.

" In the meantime Dr Keller had under his care a gentleman of rank, and of great knowledge in medicine, who was attacked with the dysentery: this person had taken the necessary evacuating medicines with good effect, but could not resolve upon taking any other remedy. In these sad circumstances Dr Keller advised him in the same manner the use of fruit, and three days afterwards received from him the following letter.—'Sir, an aversion for all sorts of medicine has brought me at last to a resolution of trying the effects of fruit. In the forenoon I began with two grapes; at noon I indulged myself with some fresh plumbs boiled; after that I eat some more raw, at the same time three peaches, and towards evening a few black-berries. All this agreed very well till eight o'clock, when the tumult in my bowels began, and continued on in the same way till midnight, so that in all that time I could scarce stay half an hour in bed; though all this was without pain, tenesmus, or any other indisposition. Without doubt two potions of manna, and four rhubarb powders, would not have had such an effect upon any man in the world. On this followed my natural rest; in the morning I found myself very well, and eat my hasty-pudding with pleasure. This happy success encouraged me to go on in the same manner the next day. The effect was exactly the same, though somewhat less sudden. My appetite and sleep increase, and every thing goes on better, thank God, from day to day.

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* A Treatise on the Dysentery which prevailed in Switzerland in the year 1765. Translated from the German of J. G. Zimmermann, M.D., &c. By C. R. Hopson, M.D. London, 1771, chapter v. p. 87 to 91.

" This letter, which Dr Keller incessantly read to all he met with sick or well, prevailed at last so much, that every body had a mind to eat fruit; and that every one, that was not obstinate to the highest degree of folly, did in reality eat it, and all with the best success.

" A physician of penetration, but by reason of the milkiness of his disposition somewhat timorous, and perhaps not free from all kinds of prejudice, has since said, in the presence of the society for natural inquiries in Zurich, that fruit, though he could not but allow it to be of real use in the dysentery, might nevertheless do harm, on account of the quantity of air which it generates, according to Hales's and Macbride's experiments, by distending too much the fibres of the intestines, already violently irritated by the disorder. Hereupon Mr Chamberlain Heidegger of Zurich, a great statesman, who with the most inconceivable penetration pierces into every thing worthy of being known under the sun, replied, that this was really true; but the same experiments shewed, that the air generated was again absorbed on the cessation of fermentation, by the juices of the fruit, and therefore this effect could not last long. It appears to me, that grapes and other fruit inflate bowels that are very weak, and otherwise subject to too great expansion, when they do not prove purgative, and the body is rather bound, or the tenesmus very great; just as manna is very inflating, when it does not purge sufficiently; but by the purgative power of certain fruits, and principally grapes, the stools of most of my patients were promoted, and with them the wind mostly came away. Consequently it was just as little necessary to fear in this case, that the sick would burst asunder like a bomb, from eating a few grapes, as it was for the great Winslow to prostrate himself before the altar of the Virgin Mary (when he had prescribed two ounces of manna in the hospital at Paris) under an apprehension that it might excite too strong a purging, or tear in pieces the tender tissue of the fibres of the intestines."—Pp. 87–91.

Dr Zimmermann, in summing up the evidence regarding the merits of the different remedies employed in the treatment of dysentery, concludes rather sarcastically, "that grapes and fruit likewise evidently appeared to be an excellent remedy for the same, though, in the Hippocratic assemblies of old women, it still meets with a very bad reception."

At a much later period we find a very decided testimony in favour of the sanative influence of acid fruits furnished by the eminent traveller, Dr Edward Clarke, who experienced their effects in his own person. Dr Clarke, when travelling in Sweden and Lapland, in the summer of 1799, was attacked with dysenteric symptoms of considerable severity, and which, continuing for weeks with more or less intestinal pain, reduced him so much both in flesh and strength, that he at one time despaired of recovery. Under this disease, with extreme loss of flesh and strength, he had laboured for weeks, and struggled in his onward progress to the Arctic Circle. At length at Enontekis, in Lapmark, when residing with the clergyman of the parish, and in a state of great debility, he informs us that the children of the parson brought him a supply of the cloudberries, the fruit of the *Rubus Chamæmorus*. Under the use of these fruits, eaten with sugar and cream, the febrile symptoms speedily abated, and his spirits and appetite were restored; "and when sinking," he adds "under a disorder so obstinate that it seemed to be incurable, the blessings of health were restored to him, where he had reason to believe he should have found his grave. The symptoms of amendment were almost instantaneous after eating of these berries."* This was on the 25th of July 1799.

Art. X.—*Case of Inflammation of the Adipose Tissue, forming the Sheath of the Carotid Artery, followed by erosion and perforation of the Arterial tissue and fatal Hemorrhage; with some Remarks on the peculiarities of Inflammation of the Adipose Tissue.* By David Craigie, M. D. Physician to the Royal Infirmary, Edinburgh.

I have much reason to doubt whether the morbid relations of the adipose tissue have received from the pathologist that attention to which they are entitled; and whether they have or not, I think, it may become a just and reasonable subject of inquiry, whether these relations have in all cases been rightly understood. When we reflect on the extensive anatomical distribution of this tissue, the intimate manner in which either the tissue itself, or its characteristic secreted deposit is connected to many of the most important internal organs, and the manner in which one division of it is employed in inclosing the blood-vessels, we must admit that, pathologically speaking, it is a tissue, the morbid states of which may exercise the most important and serious influence on other tissues and organs with which it is associated.

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* Travels in various countries of Europe, Asia, and Africa, by Edward Daniel Clarke, LL. D. Part third, Scandinavia. Section first. London, 1819. Vol. v. chap. xi. p. 376.

The inflammatory states of the adipose tissue are not only in themselves of the highest importance, from the anatomical and physiological properties of the tissue, but, in consequence of the uses to which this tissue is applied in inclosing and supporting others, and especially the nutrient vessels of blood-vessels and nerves, these states and their effects may exercise a most important influence on the economy, and one which, I believe, has not hitherto been fully understood.

In my Elements of Pathological Anatomy, published in 1828, I was led from various facts to form the opinion, that the peculiar disease described as Diffuse Inflammation of the Cellular Membrane, was indeed inflammation of the adipose tissue, as quite distinct from the filamentous, principally because that disease takes place chiefly in those regions in which the adipose tissue is most abundant,—for instance in the neck, in the chest between the two pectoral muscles, in the arm-pits, in the extremities immediately beneath the skin, and in the buttock at the verge of the anus.* The correctness of this opinion I had soon frequent occasion, both in the course of private and hospital practice, to see amply and satisfactorily confirmed; and in an article on the Anatomy and Pathology of the Adipose Tissue in the Cyclopædia of Anatomy and Physiology, I have adduced the leading facts and arguments, which, according to my own views, tend to establish this as a principle in morbid anatomy and pathology.

Among the proofs adduced in favour of this view, I have there mentioned the following. "In cases of diffuse inflammation affecting the arm, the inflammation spreads along the adipose membrane, producing sero-purulent secretion and sloughs of the adipose tissue. In cases of inflammation at the verge of the anus, the disease spreads in the same manner, and affects almost exclusively the adipose tissue round the anus and rectum, and along the *glutaei* muscles. It is in the same manner that the adipose cushion with which the blood-vessels are surrounded is occasionally the seat of a species of bad inflammatory action, terminating in fetid and sloughing suppuration."

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* Elements of General and Pathological Anatomy, p. 36 and p. 62.

I have several times, I may say often, observed inflammation of the adipose tissue, presenting the external signs described by my late friend, Dr Duncan Junior, as those of diffuse inflammation of the cellular membrane, produce all the effects now specified, and, by the peculiar manner in which the inflammatory process spreads along the meshes of the tissue, detach extensively the skin from the muscles, and the muscles and *fasciæ* from each other, and, in consequence of the intricate manner in which it insinuates itself between the muscles and their *fasciculi*, produce extensive disjunctive destruction of the different parts which it affected. Thus, on the side of the chest, I have seen it first disjoin, and then kill the fibres of the intercostal muscles, and, affecting the *pleura costalis* at its muscular surface, pass to the free surface, and give rise to pleurisy and *empyema.* In the buttock, at the margin of the anus, I have seen it detach the skin completely from the subjacent muscles, dissect round the *sphincter* and *levator ani* as completely as if done by the knife, and produce such disjunction and separation as to render the whole of the muscles completely useless as organs of motion.

In the course of these destructive processes, this disease, which, though first confined with extreme accuracy to the adipose tissue, eventually affects muscles, tendons, blood-vessels, and nerves, by killing and detaching that texture which supports and encloses them, and conveys their nutrient blood-vessels, is ever attended with febrile symptoms, remarkable for their character in deranging all the functions, and impairing more or less, sometimes very considerably, the muscular strength. The pulse is rapid, but generally much oppressed, and though sometimes at the commencement sharp, is generally contracted, wiry, and even vermicular. The skin is pungently hot and dry; the tongue more or less furred, with much thirst; and in severe cases, where the disease assumes a violent character, the patient raves or mutters, and sometimes passes into a state of *typhomania* (*coma vigil,*) or even afterwards coma. The complexion is often of a dingy colour, as it is in typhous fever, or in cases of traumatic gangrene, or in cases of death by animal poisoning; and the eyes, though they may be free from injection, are generally suffused and turbid. At the same time, almost all the great secretions are more or less completely suspended, or as it were locked up, by the perverted and diminished action of the capillary vessels. The skin is dry and imperspirable, and only at the termination of the disorder betrays the existence of clammy moisture; the urine is scanty and clear till the close, when it becomes sedimentous; and no cathartic medicines, however powerful, can produce feculent discharges from the intestines, and all that escapes is a watery secretion with minute black specks, grains, and patches of undecomposed bile, without the characteristic feculent odour or aspect.

The peculiar characters of this form of fever have procured for it, from Dr Butter* the name of Irritative, and from Mr Travers,† that of Constitutional Irritation; denominations which may be perfectly correct, if they either denoted a new form of general disorder, or established as a new principle in pathology, the circumstance, that when any individual texture is in a morbid state, it gives rise to derangement, perversion, and irregularity, in the motions of the sanguiferous system and the dependent secretions. It appears to me that there is in this nothing new nor even singular, when we know, that it is an established principle in physiology and pathology, that all the textures of the animal body are so allied, that one cannot be long in an unhealthy state without inducing general disorder, and that all the properties and actions of these textures are so intimately associated, that those of one organ are almost never impaired or perverted, without betraying the existence of this impairment or perversion, by disorder in the motions and actions of the sanguiferous system, and, its great dependent, the secreting apparatus of the different organs.

With regard to the term *Irritative Fever* employed by Dr Butter, it is too vague, and not sufficiently specific to be employed in the sense in which that author has applied it. In one sense every fever may be said to be irritative, in so far as the febrile phenomena are the effects and evidences of irritation in the vessels of the system at large, or of some particular organ or set of tissues. Thus typhous fever may be said to be irritative, in so far as it is the effect of a specific animal poison, which, there is reason to believe, is present in the blood, and irritates every texture of the body to which the blood-vessels convey that fluid. Again, gastric fever, or gastro-enteric fever, may both be said to be irritative, in so far as a morbid state of the mucous membrane of the alimentary canal, or of the blood-vessels of that membrane acts as a cause of irritation to the vascular system, and the nervous system of the whole frame. Even the symptomatic fevers of pneumonia and enteritis are equally entitled to the character of irritative fevers, in this respect, that the morbid state of the inflamed textures acts as an irritating agent to the system at large, and especially to the motions of the vascular system.

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* Remarks on Irritative Fever, commonly called Plymouth Dock Yard Disease; with Mr Dryden's detailed Account of the fatal cases. By John Butter, M.D., F. R. S. &c. Devonport, 1825, 8vo. pp. 302.

† An Inquiry concerning that disturbed state of the Vital Functions, usually denominated Constitutional Irritation. By Benjamin Travers, F. R. S. Senior Surgeon to St Thomas' Hospital, &c. &c. London, 1826, 8vo. pp. 556. For accounts of these works, the reader may consult the twenty-sixth volume of this Journal, p. 105, and 311.

It would be easy to show also that the term irritative fever was unfortunate in this respect, that it is calculated to direct the attention to the general disorder, with the hazard of overlooking the local cause of that disorder. The observation of the actions of the living body, both in the state of health and disease, shows that, excepting in the case of those fevers called idiopathic or primary, every febrile disorder, and every irritation of the system at large, may be traced to some lesion of an individual tissue or organ, more or less serious and extensive; and even in the case of idiopathic fevers, the existence of local causes of irritation in particular systems may not unfrequently be recognized. In the instance of the disease of which I treat, every circumstance, both in the symptoms and the morbid anatomy, concurs to prove, that the lesion of action in the adipose tissue is the local cause of the general disorder.

To the term *Constitutional Irritation* employed by Mr Travers, the same remarks are in a great measure applicable. It may well become a question what febrile disorder might not be denominated constitutional; but it must at the same time be allowed, that the use of such a term conveys no clear or definite notion of the malady which it is intended to designate. The strongest objection, however, to this term appears to me to be in the circumstance, that it seems to invest with a degree of obscurity and even mystery a subject, which it ought to be the wish of the pathologist, if possible, to make clear. It is no slight matter, in a science so obscure, and in some points so difficult to be understood, as pathology, that all the phenomena of any disease are at once referred to some mysterious state of the constitution; and I confess, that to me it seems singular, that a writer of the original mind of Mr Travers, has, by adopting this term, allowed the doctrine which it implies to pervade all his reasonings and views; and, as it appears to me, led him to confound, under one general denomination, a great number and variety of different local affections, which agree only in the circumstance of giving rise to similar symptomatic effects. The whole of the doctrines of Mr Travers would have been much clearer, I am persuaded, had he distinguished the several local affections and lesions according to their seats, and the tissues affected, as far as was practicable. Upon this principle, those lesions which affected the adipose tissue, and upon which evidently depended the symptoms of certain forms of constitutional irritation, should have been separated from those affecting other tissues. Upon this point, however, while I feel it impossible to adopt the views of Mr Travers on this subject, I remember, that I speak of the doctrines of one whose labours in the cause, both of medical and surgical pathology, entitle him to the highest deference and respect from every member of the profession.

That a tissue so extensively distributed as the adipose membrane, and one which, be it remembered, is very closely connected and sometimes intricately combined with the substance of various organs essential to life, should in its morbid states give rise to all this derangement in the economy, is to me neither extraordinary nor unexpected, when I consider the analogical disorders of the system arising from affections of other tissues. It would be indeed rather extraordinary that inflammation of the adipose membrane should take place, without very considerable disorder in the sanguiferous system of all the organs; and the more I think on its anatomical distribution, its physical characters, and its physiological relations, the less singular does the general fact of the febrile irritation, as it has been called, appear, however difficult it may be to explain or understand the peculiar character of the phenomena.

Independent of the extensive anatomical distribution of this tissue, which I have elsewhere explained, and to which I need not here recur, the anatomical position, and the physical and physiological characters of the tissue, present peculiarities which tend to impress on its inflammatory state and the concomitant febrile disorder peculiar features of great intensity.

In the first place, as to anatomical position, the adipose tissue is so closely confined, that, when inflamed and consequently distended, it cannot easily expand. This is particularly the case with the dense adipose cushion surrounding the blood-vessels and nerves, which in the extremities at least, and in the neck is closely packed and compressed, as it were, by the all incumbent and surrounding tissues. Whoever has examined the adipose cushion surrounding the carotid artery in the neck, or accompanying the axillary and brachial in the arm-pit and arm, or the femoral and popliteal arteries in the leg, must at once admit, that little or no space is, in either of these regions, left for the casual expansion of the adipose membrane, from whatever cause proceeding. Not only is the adipose cushion there closely confined by condensed filamentous tissue, but it is further inclosed and compressed by the incumbent *fasciae*, muscles, subcutaneous adipose membrane, and skin; and the degree of tightness may be estimated from the fact, that even when cut into in the healthy state, it is forthwith protruded, and is with difficulty replaced. This tightness is one great cause of the readiness and celerity with which the adipose tissue in this situation passes so readily into mortification. As it is distended by the inflammatory vascular congestion, and as the surrounding parts do not yield with proportional facility, it is as if inclosed within a long tight ligature, and is in a manner strangled by its own enlargement. This result was clearly illustrated by the case to be detailed in this paper.

In the second place, the physical properties and the physiological relations of this tissue may be allowed to have considerable influence in giving the febrile disorder its peculiar characters of irritation and subsequent depression. While the adipose layer consists of two parts, organic or vital tissue, and an inorganic or secreted substance, the former bears in all instances so small a proportion to the latter, that the vital properties are necessarily and accordingly much less prominent than the mere physical properties. In some instances of considerable corpulency these vital properties must be almost extinct in relation to the physical properties. The component *sacculi* of the adipose tissue itself are not possessed of high or strongly marked vital powers; and the vessels distributed to them, which are not large or numerous, seem unable to maintain its energies when subjected to disease or injury. Pressure or stretching it bears very imperfectly, as we see in cases of fever, in which it is often killed to a large extent in the sacral region, long before the skin is affected, and when the latter tissue is only affected in a secondary and inferior degree. It is perhaps of no great moment whether this imperfect and feeble vital energy depends on the want of nerves, or on the small number and size of its nutrient vessels. The fact of feeble vitality is well established by many phenomena of daily occurrence.

This low degree of vital energy seems the principal if not the sole cause of the disjunctive, and, as it may be termed, the disorganizing character of the inflammation of which the adipose membrane becomes the seat. If we compare the different elementary tissues of the animal body, we find that the nature of the inflammatory process, of which each becomes the seat, bears a relation more or less intimate and direct to the nature of its organization. All parts well provided with blood-vessels, and, therefore, highly organized, seem to have high vital energies, and great powers of resisting disorganization. Parts, on the other hand, less highly organized, and which have few or small sized blood-vessels, may be said to have inferior degrees of organization, and to be less capable of resisting the vascular perversion in which inflammation consists. Thus the skin, the serous membranes, and the mucous membranes, all of which are highly vascular, possess also great powers of resisting the disorganizing effects of inflammation; and when these take place, either counteract this by some supplementary process, which inflicts no serious injury on the structure of the inflamed membrane, and does not permanently injure its functions, or, if actual destruction ensue, it is not by direct death of the part, but by the minute atomical absorption named ulceration, and at the same time the vessels make attempts, though sometimes abortive, to repair this species of destruction.

When the skin is inflamed, the secreting power of its exterior or cuticular surface is destroyed for a few days, and the cuticle is exfoliated, until the surface returns to its natural state, and secretes again new cuticle; or the outer surface effuses albuminous serum, as in the case of Rose and Blebs, or the miliary eruption, shingles, and other varieties of herpes,—or may secrete purulent matter, as in small pox, impetigo, itch, and similar eruptions;—but, after the process is completed, and along with it, the texture always makes efforts to prevent any destruction of its substance, and if destruction have taken place, repair succeeds.

In the case of the serous membranes, which we know consist almost solely of numerous minute arteries and veins with lymphatics, this protecting power during the process of inflammation is still more decidedly seen. The texture itself is never injured; but the moment that inflammation is established in it, its vessels secrete a sero-albuminous fluid, which coagulates spontaneously over the free surface of the serous membrane, and thus forms a protecting covering during the whole subsequent course of the disease; and this protecting covering afterwards presents nearly the same structure, and acquires properties quite similar to those of the membrane, from which it was produced. This power of reproducing itself is indeed more distinctly presented by the serous tissue than perhaps by any other in the whole organic frame; and it seems to be intimately allied with its highly organized character.

The mucous membranes possess a similar power of resisting the destroying effects of inflammation, in their faculty of secreting thickened mucus, puriform mucus, puriform serum, the peculiar coating denominated the diphtheral, and even in certain circumstances coagulable lymph. Of all these processes, the final intention is evidently to shield the membrane itself from the destroying effects of the inflammatory process; and we find, accordingly, that after each of these processes is passed, in ordinary circumstances, the substance of the mucous membrane is either uninjured, or, if at all affected, the injured surface generally is capable of performing its wonted functions. Thus even in cases of diphtheral inflammation of the throat, we find that the membrane itself is uninjured in structure, and though red, raw, and extremely tender during life, it is simply covered by a coating of albuminous mucus, which is destined to cover it, till the inflammatory state subsides. In the case also of inflammation of the intestinal mucous membranes we see thickened mucus, and mucus tinged with blood, and even a species of albuminous exudation secreted for days and weeks, without breach of surface, and evidently intended to avert such a catastrophe, until the inflammatory phenomena disappear, when the membrane gradually recovers its natural condition and properties.

My limits will not allow me to consider at length the apparent exceptions to this principle, otherwise it would appear distinctly that these were only confirmations of the fact now stated,—that the protecting faculty of any tissue against the ravages of inflammation depends very much upon, if it be not directly proportioned to, its organization, or the size and number of its nutrient vessels. The principle is also very clearly illustrated in the inflammation of the adipose membrane, in which an imperfect, and, indeed, an inferior degree of organization seems to be the main cause of the destructive effects of that process. In that tissue inflammation is no sooner established than it proceeds rapidly to death, chiefly because the texture has not powerful vital energies, and is less capable than others of resisting the tendency to destruction. It possesses less of the independent form of vitality which the vascular system communicates to all the elementary tissues of the frame, and hence sinks more easily and promptly under the influence of the perverted or impaired vascular disorder in which inflammation consists.

It is not unlikely that this is also one of the principal causes of the peculiar irritative characters of the febrile disorder with which the inflammation of the adipose tissue is attended. We know that in the case of inflammation of highly organized tissues, as the serous membranes, the character of the concomitant fever is often distinct and acutely inflammatory,—much perverted action of the vascular system, but little of the nervous system, and much less of the overpowering prostration and oppression of all the vital powers which attend inflammation of the adipose membrane. In the one case, the actions of life seem to be simply increased, and are certainly perverted, and in one respect augmented in intensity. In the other, they are oppressed and overpowered; and the full vigour of reaction, as it has been named in the mechanical language of the iatro-mathematical school, is not permitted to develope itself.

The phenomena of this febrile disorder are more or less strongly and distinctly marked in different cases, according to the extent of the disease, and the ravages which it causes among other tissues. In one very severe case, which terminated fatally, and in which the disease was seated in the adipose tissue of the thigh, and disjoined the whole of the muscles from each other, reducing them to dead black masses, isolated the blood-vessels and nerves, and detached the whole from the thigh bone, which was loose, and in many parts denuded of periosteum, the symptoms were those of typhous fever for several days previous to death. The pulse was quick and small; the skin hot and dry; the tongue covered with a thick brown rough dry fur, and *typhomania* or muttering delirium, with *subsultus tendinum*, lasted for five days, and passed into fatal coma. In other cases, however, in which the disease is less extensive, the symptoms of irritated and oppressed brain are less conspicuous; and when the disease shows a tendency to stop, the febrile irritation assumes a more inflammatory and less typhoid type.

But it is not only in its constitutional effects that inflammation of the adipose tissue is a malady so important. From its intimate union with the parts which it incloses, its destruction entails their destruction; and, if it do not prove fatal by the severity of the febrile disorder which it induces, it may do so by the ravages which it causes among muscles, nerves, and blood-vessels. I mentioned in the paper formerly alluded to its tendency to expose and denude the blood-vessels; because in almost all the dissections which I have seen and performed of this disease, I have found the vascular sheath more or less diseased, sometimes destroyed, and the vessels exposed, the veins thickened and inflamed, and the arteries brittle, softened, and sloughy. In all these cases, however, the disease had proved fatal, either by the intensity of the febrile disorder, or perhaps by causing inflammation of the veins, or passing to some internal organ, as for instance when it affects the adipose membrane of the chest, and thence passes, as I have seen it, to the *pleura* and lungs. It cannot be doubted, however, that, were life not terminated in either of these modes now mentioned, the destruction of the adipose tissue, forming the sheath of the vessels, would have the effect of producing death in the arterial tunics, and rupture of these vessels. We know, that when the sheath is by any means detached from the arterial tunics, either by disease, or accident, or in consequence of operation, a result almost inevitable is death of these tunics, chiefly in consequence of the destruction, which the nutrient vessels, the *vasa vasorum*, necessarily sustain by the inflammation of the adipose sheath, by which these vessels are supported. That this has not been more frequently observed in cases of spontaneous inflammation of the adipose cushion is to be ascribed to the fact, that the disease in general proves fatal by the severity of the constitutional disorder, or by the induction of inflammation of the veins, passing from their external to their internal coat.

Though I have seen a considerable number of cases of inflammation of the adipose tissue, I am not aware of the occurrence of erosion of the arterial tunics, and consequent hemorrhage having been noticed by any one. The case, which I am now to detail as illustrative of this occurrence, and several other phenomena of this disease, is in this respect highly important. That it is almost solitary would be a small recommendation, did we not see illustrated in its history an important pathological principle, which, when rightly understood, places itself among the general doctrines of medical and surgical pathology, regarding the causes of the occurrence of hemorrhage.

Rachel Lumsden, aged 28, who stated herself to be married, but who was living under a sort of connubial compact with a labourer, not of very good character, was admitted into the Royal Infirmary, on Friday the 4th of August, with a considerable diffuse swelling at the right angle of the jaw, and in the neck, which had been of at least eight days' duration. The patient, who was a stout healthy-looking woman, though in consequence of the inability to depress the jaw, she could scarcely speak, gave us to understand that she had always enjoyed good health, and that lately, when working at out-door agricultural labour, she had, about two weeks previously, slept in a barn, and, as she imagined, caught cold. Soon after, viz. Friday, the 28th July, she felt pain and uneasiness in the throat, with some external swelling, and with difficulty of deglutition, which gradually increased, till she could neither swallow saliva, nor depress the jaw.

When admitted, the patient presented a diffuse, hard, firm painful swelling, extending from the right ear downward, over the angle of the jaw to the neck, below the right *ramus*. She was quite unable to open the mouth, protrude the tongue, or depress the lower jaw, and she signified as well as she could, that deglutition of solids was impracticable, and that of fluids performed slowly, with difficulty, and extreme pain. She complained much of thirst; the skin was dry and hot, though she often felt chills; and the pulse was quick, about from 104 to 116, small and oppressed.

Blood was directed to be drawn from the arm to the extent of eighteen or twenty ounces; a large dose of the saline infusion of senna was directed to be taken at such intervals as the swallowing faculties of the patient allowed; and she was directed to inhale the vapour of warm water.

The blood was drawn only to the extent of twelve ounces, as it produced faintness. The pulse was 100, small, and oppressed; the skin was still hot and dry, and thirst continued in considerable intensity. As she was still unable to protrude the tongue, the state of that member could not be ascertained. The swelling at the right angle of the jaw continued undiminished in size, was still hard and painful, and the patient was quite unable to depress the jaw. As the pulse and skin still denoted the existence of the febrile disorder, and as there was reason to believe a second blood-letting would be better borne than the first, the venesection was directed to be repeated to the extent of twelve ounces more, and the bowels to be opened by means of four ounces of the saline infusion of senna, with one ounce of the tincture, and to be repeated if requisite. An emollient poultice was directed to be applied to the swelling; and as the hair was swarming with vermin, it was desired to be removed.

Twelve ounces of blood produced approaching faintness, and the medicine procured three motions. The patient, however, had spent a bad night, with restlessness and little sleep; great thirst, and inability to swallow. On the morning of the 6th of August, she brought up by excreation a considerable quantity of thickened mucus, some purulent matter, and blood, with a fetid odour; and the breath exhaled an extremely fetid offensive smell. The pulse varied from 96 to 104, and was oppressed.

The poultice was directed to be continued, and four ounces of the saline infusion of senna were directed to be administered.

Next day, the 7th of August, after rather less uneasiness during the night, the tumour at the angle of the jaw was found to be at one point rather soft and elastic; but the difficulty of deglutition was little alleviated; the tongue could not be protruded, nor the jaw depressed, nor was it possible to inspect the throat in the slightest manner. A puncture was made by a common lancet in the softest and most prominent part of the tumour, and some purulent matter, slightly coloured with brownish bloody fluid, and a large slough of the subcutaneous adipose tissue, were discharged. The bowels had been moved freely; and all that was directed in addition to the poultice was the exhibition next morning of four ounces of the saline infusion of senna, with one ounce of the tincture of senna. It turned out that this medicine was rendered superfluous. The fetid odour of the breath was so strong, that the atmosphere round the bed was for several feet tainted by it, and rendered insupportable.

I had at the hour of clinical lecture, viz. one o'clock, mentioned, among other cases, this as one of those complicated affections, in which not one but several textures were affected;—in which there were symptoms of inflammation of the base of the tongue, inflammation of the adipose tissue of the neck, and perhaps of inflammation of the right tonsil; and that, though cases of this kind were usually classed under the head of *cynanche parotidaea*, or mumps, yet it was manifestly a much more formidable disorder. I also added, in speaking of the prognosis, that though it might terminate favourably, yet we must not be surprised if it extended in the usual manner of diffuse inflammation along the adipose tissue of the neck.

Before I had left the Hospital at about a quarter of an hour after two o'clock, the nurse came hastily to request me to see Lumsden, as she was discharging blood very freely from the mouth. I found the blood, which was evidently arterial, issuing in a considerable stream from the mouth and throat, and attempted, by inserting my finger, to ascertain whence it proceeded, and to suppress the current. In the meantime, the poultice having been removed, and the head and neck freely exposed to cool air, I sent one of the pupils for Mr Syme, whom I expected to find at the University. Before he arrived, however, the hemorrhage had ceased. Mr Syme recommended the application of ice, and that the patient should be kept quiet. This was about half-past two o'clock on the 7th. The blood lost was about one pound and a-half.

I saw the patient again at half-past three, when there had been no recurrence of the hemorrhage; and when I explained to the woman herself the necessity of keeping perfectly quiet, and directing the drink to be taken cold, but to avoid all motion of eating or swallowing as much as possible.

A probe inserted into the external wound went to a considerable depth in the direction of the base of the tongue and tonsil. The pulse was good, about 90.

I saw her again about seven in the evening, and found that the hemorrhage had recurred at six, and after proceeding to the extent of a pound and a-half or so, had again stopped spontaneously. As she was persuaded that it was brought on by the ice, I did not press her to continue its application. The pulse was still good, about 96, but rather softer than yesterday. An opiate, containing forty drops of solution of muriate of morphia, was directed to be given immediately; and, in the event of the recurrence of the hemorrhage, an enema, containing a drachm of the solution, was also ordered to be given.

The hemorrhage recurred two several times during the night to a small extent, and each time stopped spontaneously. About two pounds of blood, however, had been lost.

Next morning the pulse was very feeble and thready; the countenance pale, and bedewed with clammy moisture; the thirst great; the voice languid; and all the motions extremely languid. The fetid offensive odour continued to be exhaled from the mouth, though it was less marked than the previous day.

It was agreed at a consultation with Mr Syme, to give a little beef-tea cautiously, and afterwards, if the hemorrhage did not recur, to administer a little wine. The ice was continued, and pills containing acetate of lead and opium were given.

I returned to the Hospital at half-past six, and found her just dead. She had continued to sink gradually, and expired at six P. M. on the 8th.

The body was inspected on Wednesday the 9th August, nineteen hours after death.

Inspection.—A small perforated ragged aperture was found at the base of the anterior pillar of the *velum* on the right side, another small ragged aperture was situate on the inner margin of the pillar about a line below the level of the last, and there was ulceration of the mucous membrane at the lower margin of the tonsil.

The right tonsil was completely destroyed, and in its place, the surface, which was hollowed, was dark-brown coloured, much softened, irregular, and emitted a fetid smell.

Below and behind this was a large irregular cavity, about the size of a filbert and an inch deep, on the right side of the pharynx, in the cellular tissue between the mucous membrane and the muscles of the neck.

This cavity or abscess, the surface of which was soft, of a bluish gray colour, and irregular, communicated by means of two ragged, irregularly circular openings—one small, about ○ this size—the other, fully half a square inch in diameter, with an oblong large deep cavity, which extended down the neck to the level of the collar bone. This cavity contained a considerable quantity of dark brown coloured softened blood, of a very fetid odour, and upon the removal of which the surface appeared soft, pulpy, deep brown, and very irregular. This was in the adipose tissue, forming the sheath of the vessels; and upon gently washing its surface it was found that the external and internal carotid were denuded on their posterior and external aspect and exposed.

The trunk of the eighth pair was also found lying exposed on the exterior side of the vessels, and the hypoglossal was found passing in on the outside of the external carotid artery. A female catheter was carried from the common carotid through the external carotid, and a probe through the internal carotid.

It was then found that the latter artery presented near its divarication from the common and external carotid, on the external, lateral aspect two ragged openings, one below,—exactly before the bifurcation, and strictly speaking, in the common carotid trunk, and another about two lines higher up the artery, in the angle between it and the external carotid, as in Fig. 2, Plate VIII. and in the trunk of the internal carotid. The openings were ragged and irregular, and presented the aspect of having been made by ulceration or erosion of the coats, which externally were denuded and softened.

This destruction and softening of the adipose sheath of the vessels, extended exactly one inch and five-eighths below the bifurcation, and for that space the artery was denuded and exposed.

Upon examining the lungs, though they were comparatively sound in external appearance, and the *pleurae* free from false membrane or adhesions, yet the outer serous surface presented a minute reddish asteroid speckled appearance, which was still more distinct upon making incisions into their substance. The large and middle sized bronchial tubes were found streaked with blood, and when several of the latter and the small sized were laid open by the knife, it was possible to trace blood passing from them into their remotest recesses. It then appeared that the red asteroid aspect of the minute specks diffused through the substance of the lungs was produced by blood in the pulmonic vessels, and indeed, slight pressure made the appearance more distinct. In some parts these red specks, which were irregular and ragged at their margins, were large, in others small; but in all cases it was not difficult to trace them to the blood, which had entered into the bronchial tubes by the windpipe.

The lungs were otherwise sound, and in the interstices rather pale.

In the account now given, it is easy to distinguish the presence of inflammation of the adipose tissue surrounding the blood-vessels and nerves of the neck, as the disease under which this woman was labouring, and which proved fatal by exposing and denuding the carotid trunk and branches. The oblong cylindrical cavity which extended from the right tonsil and parotid gland above, to the level of clavicle below, had been originally occupied by the adipose tissue of the sheath, and had been formed by the inflammation of this tissue proceeding to gangrene and suppuration. From this had proceeded the fetid smell of the breath, and the discharge of fetid bloody purulent matter, which took place on the morning of the 7th of August. The denudation of the carotid trunk and branches, and the subsequent perforation or rupture of the arterial tunics, and hemorrhage were the immediate consequences of the suppurative destruction of the adipose cushion, and quite similar to what has been often observed to take place in cases in which large broad ligatures were applied round arterial trunks, and where, consequently, they produced death of the adipose sheath, and the nutrient vessels of the artery, and sloughing of the artery itself.

The extent to which the disease in the arterial adipose cushion had proceeded was remarkable; as it occupied a space of between four inches and four inches and a-half; and it has so completely denuded even the trunk of the common carotid, that exactly an inch and five-eighths of that artery was exposed, and its exterior surface sloughy and brittle. This shows that it must have been impracticable to apply a ligature to any part of the trunk of the carotid artery, with the hope of eventually arresting the hemorrhage, since the fragility and unhealthy state of the arterial tissue would have prevented adhesion, and in all human probability given way by a second erosion of the artery.

It is important to remark, with reference to the state of the lungs, that death in this case was not produced by hemorrhage solely. The blood found in the bronchial tubes, and the red specks of the lungs, indicated that a degree of *asphyxia* had occurred in consequence of the blood getting into the pulmonary vesicles. The extensive injection which had taken place in consequence of this event, showed that the air must have been first partially expelled from the lungs, and then prevented from reaching the minute tubes, and the vesicles in which they terminated.

It must be further noticed, however, that the gangrenous state of the adipose vascular sheath and the right tonsil must have contributed to the fatal event; since it is impossible to imagine ravages so extensive to take place among parts so important, exposing even the trunk of the pneumogastric nerve, without believing that they must have exercised a very remarkable influence upon the vital energies of the organized frame. Even the exposure and denudation of so important a nerve as the pneumogastric must have been a most unfavourable circumstance in the case, though no arterial sloughing or hemorrhage had ensued; and when we remember, that both that nerve and the hypoglossal were denuded, though the latter, to a more limited extent, it becomes an important and serious question to consider how far, even had hemorrhage not ensued, recovery could have been effected, without injury to the functions of the lungs, the stomach, the heart, and the tongue.

It is a question of interest to consider whether this disorder had originated in the vaginal adipose cushion, or had spread upwards to the tonsil and throat, or whether it had commenced in the tonsil and base of the tongue, and had thence extended to the adipose cushion of the vessels, or had commenced in all these parts at or about the same time. In favour of each of these opinions, the evidence afforded by the inspection of the parts was nearly equal in point of weight. The adipose cushion was completely destroyed and dissolved, and its place was occupied by a large, oblong, irregularly cylindrical cavity; and such a change, it may be argued, might have occupied eight or ten days,—the time which elapsed from the first date of illness to the occurrence of hemorrhage. On the other hand, the tonsil was completely destroyed, and a large abscess had been formed behind and external to it, communicating with the adipose sheath; and it might be with plausibility argued that this tonsillar disease must have occupied some time in its formation and completion, and that its extension to the adipose sheath was the cause of the destruction there observed. All reasonings of this kind, however, it must be allowed, are liable to considerable fallacy; and it is quite impossible, from the phenomena afforded by a single case, to arrive at certain and definite conclusions on these points. I may be allowed to observe, however, that so far as could be judged, it seems most rational to think that the disease had commenced in the tonsil and adjoining adipose tissue, and thence spread very rapidly to that of the vessels.

On the remote cause or causes of this malady no satisfactory information could be procured. The account given by the woman herself, and confirmed by her husband, was, that about a week before she was attacked, viz. about the 20th or 21st of July, in the course of agricultural labour, she had reposed one night in a barn, and thereby been affected by sore throat, and the usual effects of exposure to cold. After the 28th she was so ill that she was confined to bed. But the woman afterwards informed the nurse of the ward, that, two days previous to admission, she had been kicked, bruised, and beaten about the chest, and that she blamed this for the cause of her disorder, which she imagined to be seated in the lungs. Though the character of the husband proved, upon further knowledge, to be the very worst possible, yet we found it impossible to establish any connection between the alleged maltreatment and the disease of which the reputed wife became the victim.

I may add, that the woman when admitted looked as if she had been taking mercury for previous ulceration of the throat. On this point, however, our inquiries were equally fruitless as on the others.

Explanation of Plate VIII.

Fig. 1. View of the sheath of the vessels laid open, with the inner surface soft, sloughy, irregular, and gangrenous.

K. Trunk of the common carotid with minute orifice near the bifurcation.

k. Internal carotid with minute orifice at its origin immediately after the bifurcation.

Fig. 2. Rough sketch of the trunk and two arteries, to show the relative position of the openings,

in.r Med. & Surg. Jour. D^R CRAIGIE'S CASE Plate VIII, p. 412, Vol. XLVIII.

OF INFLAMMATION OF ADIPOSE TISSUE.

Fig. 1.

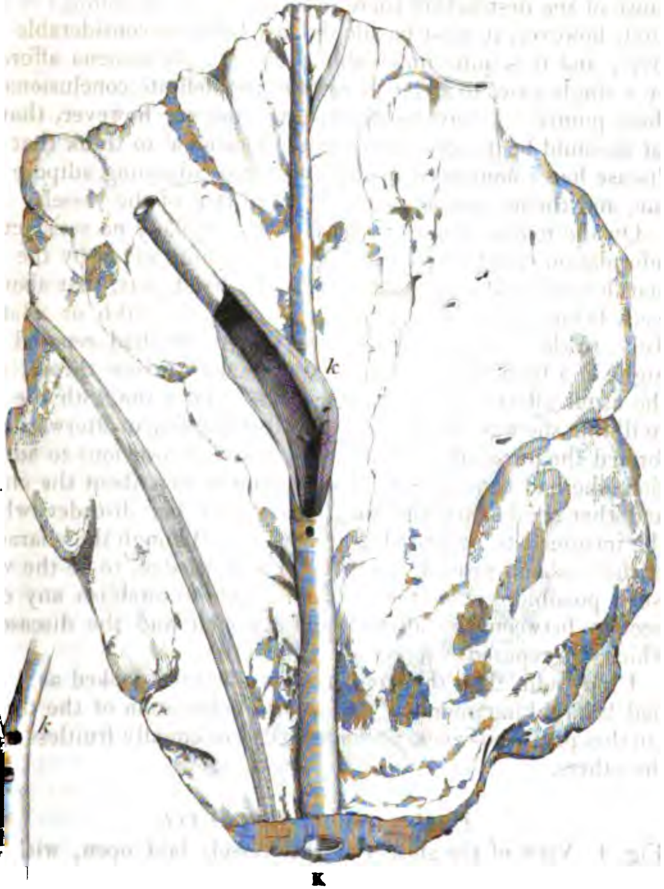
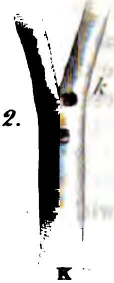


Fig. 2.



PART II.

CRITICAL ANALYSIS.

Art. I.—*Sur l'Homme et le Développement de ses Facultés. &c.—On Man and the Developement of his Facultiés.* By A. Quetelet, Perpetual Secretary of the Royal Academy of Brussels, Corresponding Member of the Institute of France, of the Royal Astronomical Society of London, of the Royal Academies of Berlin, Turin, &c. 2 Vols. 8vo. Paris, 1835. Pp. xii. and 652. Six Plates.

M. Quetelet, as most of our readers are probably aware, has distinguished himself by a series of interesting and original memoirs on various branches of statistics. In the volumes now before us, we are presented with a summary of the facts and conclusions which he had previously promulgated; and as we conceive that they merit the serious consideration of all classes of society, and more especially of the members of the medical profession, we propose in the following pages to offer as full an analysis of the work as our limits will permit.

Before the appearance of M. Quetelet's papers, the laws regulating the birth, developement, and death of man had been studied, neither as a whole, nor in reference to the mode in which they react on each other. Inquiries more or less complete into some of these laws, results deduced from isolated facts, and theories frequently founded on single observations, constituted almost all the materials of the science of man; and though the influence of age, sex, occupation, climate, and season on the number of births and deaths had been carefully investigated, no attempt had been made on a large scale, to ascertain the laws regulating the increase of the height or weight of man, the developement of his powers, the sensibility of his organs, and his other physical faculties. The age at which these faculties attain their *maximum* of energy, that at which they begin to decline, their values in respect to the different epochs of life, the mode in which they are influenced, and the causes by which they are modified, remained undetermined, and little attention had been paid to the study of the progressive developement of the moral and intellectual part of man, to the influence exercised over it by the body, or over the latter by the mind.

These remarks do not apply to speculative science, which has long ago discussed most of the questions within its compass, which could be immediately encountered without the numerical appreciation of facts. But it will be found that before M. Quetelet began his investigations, all those anthropological questions which required the aid of the sciences of observation and calculation remained almost, if not altogether unsolved, and that he is undoubtedly the first who has attempted to reduce the various phenomena of the moral and intellectual nature of man to fixed laws, the operations of which may be exactly calculated.

The work before us is divided into four books, the first three containing the facts which the author has collected, and the last, his conclusions. Whatever may be thought of the latter, the former must ever rank as a valuable contribution to vital and moral statistics.

The design of the author may be briefly stated to be, to study in their effects those causes, whether natural or disturbing, which act on the developement of man, and to endeavour to ascertain the amount of the influence which they exert, and the manner in which they modify each other.

The individual whom M. Quetelet selects for consideration is an imaginary being, invested with the average powers, either of mankind or of a nation, and upon whom all things act with an energy equal to the average of that which they exert on society. In establishing the basis of *social physics*, this imaginary being must be alone considered, no account being taken either of individual cases, or of anomalies, and all inquiry being avoided as to whether or not one or more of his faculties be capable of greater or less developement. Suppose, for instance, that we wish to ascertain the disturbing influence of man in modifying his physical power. By means of the dynamometer, we may determine the power of the hands or loins in a large number of individuals of all ages, and the results thus obtained in respect to one country will give two scales of powers, the value of which will be proportioned to the number of observations, and the care with which they have been made. By afterwards comparing scales obtained by the same means, and under the same influences, but at different epochs, it will at once be ascertained whether the amount of power has been diminished or increased by the disturbing influence of man. Farther, we may in the same way ascertain the variations which the different classes of society have undergone.

After having considered man at different epochs, and successively determined the various elements of his physical and moral condition, and the variations which occur in the quantity of the things produced and consumed, in the increase or diminution of his wealth, and in his relations to other nations, we shall be able to ascertain the laws to which he has been subject in different nations from their origin; in other words, we shall be able to follow the course of the centres of gravity of each part of the system, in the same way as the laws relative to man in each nation shall have been ascertained, by grouping the observations made on individuals. In this point of view, nations, in reference to the social system, are what individuals are to nations, both having laws of growth and decay, and both having a more or less extensive part in the disturbances of the system. It is only from a general view of the laws acting upon different nations, that we shall be ultimately enabled to come to any accurate conclusion in reference either to the equilibrium or the movement of the system, for we are still incapable of deciding in which of these states it really is. Daily occurrences satisfactorily prove the existence of internal actions or forces reacting on each other, and we may form conjectures more or less probable respecting the progress of the centre of the system and the direction of the movement; but we may yet find ultimately, that while all the parts move in a progressive or retrograde manner, the centre of the system remains invariably *in equilibrio*.

The numerous difficult problems which must be solved before any satisfactory conclusion on such subjects can be formed, will require the industry of another age at least. But in the meantime, we may avail ourselves of those materials, which M. Quetelet has with such ability and perseverance collected for the purpose.

We shall divide this paper into three parts. In the *first*, we shall consider the laws regulating the reproduction, in the *second*, those regulating the death, and in the *third*, the height, weight, strength, inspiration, pulse, swiftness, and agility of man at different ages.

I. REPRODUCTION.—It is a curious fact, the cause of which still remains a matter of doubt, that more males than females are annually born. In 14,500,000 observations made in France from 1817 to 1831, the ratio of males to females was found to be as 106.38 to 100, and the proportion of each year was nearly the same. To ascertain whether climate had any influence in producing this result, thirty of the most southern departments were selected, and the proportion found to be 105.95 to 100. The difference of the results, though appreciable, is small, and to render any conclusion satisfactory, it would be necessary to extend the inquiry beyond so narrow a field. Captain Bickes collected 70,000,000 observations in the more important states of Europe, and the following are the results.

States and Provinces.	*Proportion of Boys to 100 Girls.*
Russia,	108.91
Province of Milan,	107.61
Mecklenburg,	107.07
France,	106.55
Netherlands (Belgium and Holland,)	106.44
Province of Brandenburg and Pomerania,	106.27
Kingdom of the two Sicilies,	106.18
Austrian Monarchy,	106.10
Silesia and Saxony,	106.05
Prussian states taken as a whole,	105.94
Westphalia and Grand Duchy of the Rhine,	105.86
Kingdom of Wirtemberg,	105.69
Eastern Prussia and Duchy of Posen,	105.66
Kingdom of Bohemia,	105.38
Great Britain,	104.75
Sweden,	104.62
Average of Europe,	106.00

This table, so far as Europe is concerned, militates against the opinion of those travellers who have asserted that a warm climate favours the birth of females. Farther observations, especially in countries approaching the equinoctial line, are required before we can decidedly say that climate has no influence. The following table exhibits some facts which have been ascertained, respecting the proportion of males to females in the births at the Cape of Good Hope.

	Free.		*Slave.*	
Years.	*Male.*	*Female.*	*Male.*	*Female.*
1813,	686	706	188	234
1814,	802	825	230	183
1815,	888	894	221	193
1816,	805	892	325	294
1817,	918	927	487	467
1818,	814	832	516	482
1819,	810	815	506	509
1820,	881	898	463	464
	6604	6789	2936	2826

Thus among the free population, more females were born than males, and that every year, while among the slaves in five of the eight years, the males predominated as they do on the average of the whole. In the year 1816, the proportion of females to males in the births occurring in the free population, was 892 to 805, being the highest of the eight years. In the same year the reverse occurred in the slave population, the males being to the females as 325 to 294, the former predominating more than in any other except one of the years stated.

If we may judge from the Belgium returns, the proportion is influenced by a town or country residence. The proportion of males in the whole births from 1815 to 1824, was in towns, 106.66, and in the country, 106.96 to 100 females; and from 1825 to 1829, 105.29 in towns, and 106.10 in the country. This fact has also been remarked in other countries. The following table, drawn up by Captain Bickes, exhibits the same difference, and besides shows that the proportion in legitimate differs from that observed in illegitimate children.

States and Provinces.	*Proportion of boys to 100 girls.*	
	Legitimate.	*Illegitimate.*
France,	106.69	104.78
Austrian Monarchy,	106.15	104.32
Prussian Monarchy,	106.17	102.89
Sweden,	104.73	103.12
Wirtemberg,	105.97	103.54
Bohemia,	105.65	100.44
Province of Milan,	107.79	102.30
Eastern Prussia and Posen,	105.81	103.60
Brandenburg and Pomerania,	106.65	102.42
Silesia and Saxony,	106.30	103.27
Westphalia and Duchy of the Low Rhine,	106.07	101.55
Average,	106.18	102.93
Towns.		
Paris,	103.82	103.42
Amsterdam,	105.00	108.83
Leghorn,	104.68	93.21
Frankfort on the Mayne,	102.83	107.84
Leipsic,	106.16	105.94
Average,	104.46	103.85

Captain Bickes has extended his inquiries into the proportion of the sexes in legitimate births to a very great number of towns, and the average of the whole, as calculated by M. Quetelet, is 104.74 males to 100 females. The investigations of M. Poisson founded on the public documents of France, from 1817 to 1826, inclusive, show that in illegitimate births the males are to the females as 21 to 20, instead of as 16 to 15, and M. Mathieu has come to the same conclusion. The observations of Mr Babbage, in his letter to Sir D. Brewster, inserted in the first Number of the Journal of Science, lead to the same result.

Various attempts have been made to explain this phenomenon. M. Prevost conceives that, independently of any physiological cause, the explanation is to be found in the general desire for male in preference to female children. The consequence of this, in his opinion, is to prevent the increase of the family after the production of male children. When parents have a son, if any thing prevent the increase of their family, they are less annoyed than they would have been, if they had had no male progeny. May not this diminution of the number of births, he asks, after the appearance of one or more sons, tend to increase the ratio of male infants ? Without absolutely denying the influence of this moral restraint in certain cases, we agree with M. Quetelet in believing it to be altogether inconsistent with facts which we shall notice immediately.

Another explanation has been given by M. Giron de Buzareignes, in his communication to the Academy of Sciences of Paris. He divides society into three classes—the first composed of individuals whose occupations tend to develope their physical qualities, the second of those whose occupations tend to weaken these powers, and the third, of those whose occupations are mixed. According to his view, the proportion of male births in the first class will exceed that of France in general, in the second class it will be the reverse, and in the third class the two will be equal. Thus, agricultural pursuits should favour the production of males, manufactures and commerce should do the reverse. This agrees sufficiently with the results already quoted, but when applied to the different countries of Europe does not hold good.

The hypothesis of M. Bickes, who combats the doctrine of M. Giron de Buzareignes, is novel but inadmissible. He assures us that the cause is to be found in the blood (constitutions) of populations which differ from each other in this respect. According to him, political and civil institutions, customs, occupations, modes of life, riches, poverty, &c. have no influence whatever on the proportion in which the two sexes come into the world. The difference of this proportion in legitimate and illegitimate children, he does not believe it possible to explain.

The investigations of Professor Hofacker in Germany have led him to conclude, that the true explanation will be found in the relative ages of the parents. The following table exhibits the results of his inquirers.

Relative ages of the Parents.	*Proportion of Boys to 100 Girls.*
The man younger than the woman,	90.6
Do. as old as the woman,	90.0
Do. older than the woman from 3 to 6 years,	103.4
Do. do. 6 to 9,	124.7
Do. do. 9 to 18,	143.7
Do. do. 18 and more,	200.0
The man 24 to 36, and the woman 16 to 26,	116.6
„ „ 36 to 46,	95.4
„ 36 to 48, do. young,	176.9
„ „ „ do. middle aged,	114.3
„ „ „ do. above,	109.2
„ 48 to 60, do. middle aged,	190.0
„ „ „ do. above,	164.3

From the table above given, it would appear that in general, when the mother is older than the father, or both parents are of the same age, fewer sons are produced than daughters. The older the father is than the mother, the greater is the proportion of sons.

Mr Sadler's observations are next quoted by M. Quetelet, with which, from their being of easy access in this country, it is unnecessary to detain the reader further than to remark that they completely corroborate Professor Hofacher's views.

It is easy to explain on this hypothesis the difference in the proportion of sexes at birth, for the husband, being generally older than the wife, male infants must predominate. To place the matter, however, beyond all doubt, it would be necessary to ascertain in a given district of considerable extent and population, the ages when marriages are made, and then compare the proportion of the sexes according to this law which should be born, with the proportion actually produced.

M. Quetelet next examines the influence which age exercises on the fecundity of marriages. The facts which he brings forward are quoted from Dr Granville, Mr Sadler, and Mr Finlaison, and as they will no doubt be familiar to our readers, we shall give only the author's inductions.

1. Precocious marriages entail sterility, or, if fruitful, the probability of the children's lives is less.

2. A marriage if not sterile produces the same number of births, at whatever age it may be contracted, provided it be under 33 in the male, and 26 in the female. After these ages the numbers may be diminished.

3. From this and the consideration of the probabilities of life, it may be concluded, that the greatest fecundity occurs before the age of 33 in man, and 26 in woman.

4. Looking to the respective ages of the parents, it will be found that *caeteris paribus*, the most productive marriages are those in which the man is at least as old as the woman or older, provided the difference be not carried to an extreme.

M. Quetelet next inquires whether the course of nature be followed in marriages, and finds that in Belgium the greatest number occurs between the age of 26 and 30, both in men and women, the *maximum* being towards 29 in the former, and after 27 in the latter. After 35, the number of marriages sensibly diminishes. Allowing twelve months to elapse before the first child is born, which is about the average in fertile marriages, he concludes from various *data*, that men will have their first born about 30, and women about 28, which will give the duration of a generation in Belgium, and this is found to be about the duration of the average life.

It is a remarkable fact, that marriages do not become frequent till man has passed the age when his passions are strongest, and his propensity to crime greatest, and reached that at which the developement of his physical powers is completed, and his intellect becomes more energetic.

According to M. Friedlander, the greatest number of deliveries in Sweden and Finland, takes place among women about thirty years of age, as shown in the following table:

Age of the women delivered.	*Average No. of living women.*	*Annual deliv.*	*No. of women to 10 deliv.*	*Proportion in 1000 deliveries.*
15 to 20, -	134548	3298	408	33
20 to 25, -	129748	16507	78	165
25 to 30, -	121707	26329	46	263
30 to 35, -	111373	25618	43	256
35 to 40, -	97543	18093	54	181
40 to 45, -	90652	8518	106	85
45 to 50, -	78897	1694	465	17
above 50, -	69268	39	17760	0.4

M. Quetelet next considers the influence of climate on fecundity, and notices the information on this subject contained in the works of Rickman, Bisset Hawkins, D'Ivernois, Benoiston de Chateauneuf, Sadler, &c. From the deficiency of data, however, and from those which we possess being so modified by accessary causes, as to render it almost impossible to separate them from elements foreign to the question, and to come to any conclusions worthy of confidence, we can form no conclusion whether the north or the south is most favourable to fecundity.

It would appear from some facts stated by the author, that Mr Sadler's opinions on the connection of the fecundity of marriage with some other circumstances are fully borne out. The opinions to which we allude are, 1*st*, that those places in which the greatest number of marriages annually takes place, fecundity is least; and 2*d*, that such places are distinguished by the greatest mortality M. Quetelet, however, distinguishes between the fecundity of marriage, and the fecundity of population, which Mr Sadler seems to have confounded. It has been said that deaths make room for marriages, and Mr Sadler's facts prove this. But it has been farther stated that mortality increases fecundity, and Mr Sadler offers in contradiction the results which he has obtained. Now M. Quetelet shows that the fallacy arises from the application of the term *fecundity*, Mr Sadler applying it to each marriage, and his opponents to the increase in the population. In a country where the mortality should happen to be very great, especially among adults, second and third marriages may be more numerous, and each marriage thus produce fewer children, though in fact the fecundity of the population be very great. A woman, for instance, may have by one marriage five children. If the mortality should happen to be greater, and she be married twice instead of once, she might have the same number of children or even more, and yet the fecundity of each marriage would be only a half, while the fecundity of the individual was in reality the same or even greater. Thus, though the laws above given as stated by Mr Sadler, be according to one interpretation, though not that which he affixes to them, correct, to avoid ambiguity, and reconcile them to the real state of the case, they ought to be thus expressed: *Cæteris paribus*, in any country where the mortality is increased, the number of marriages will be increased, and the fecundity of each marriage lessened.

M. Quetelet next shows the influence of particular years on the number of marriages, and their fecundity. From the researches of Sussmilch, Rickman, and Sadler, he concludes that the fecundity of marriages does not sensibly vary in any one country in the course of a century, when periods of calculation are taken of a length sufficiently long to remove the accidental causes produced by more or less fortunate years.

In particular years, epidemics, famine, and great plagues influence in a sensible manner, not only the number of deaths, but that of marriages and births. It certainly does not always follow that when the necessaries of life are dear one year, that fewer births and marriages should be the result, because this influence may be masked by some other. But when the increase of price is considerable, it is more than probable that the register will show a falling of in the number both of marriages and births, as well as an increase in that of deaths. This is supported by a table which our limits will not permit us to quote.

The influence exerted by the different seasons next engages the attention of the author. In 1824, M. Quetelet published the results of some inquiries into this subject in Brussels, which were afterwards confirmed by the publication of Professor Vanswinden's researches and others more extensive which he himself instituted both in the principal cities, and also in the rural districts of the low countries. The following table shows the inequality in the number of births at various seasons. The first column exhibits the average number of births for twelve years, both in towns and in the country. In the last column, the average of the whole number is taken as unity, for the purpose of showing the variations more clearly.

Months.	*Births.*		*Births.*	
1815 to 1826.	*Towns.*	*Country.*	*Towns.*	*Country.*
January, .	68255	159787	1.067	1.102
February, .	71820	170699	1.122	1.177
March, . .	69267	164851	1.083	1.137
April, .	66225	147118	1.035	1.014
May, .	62102	134446	971	0.927

Months.	*Births.*		*Births.*	
1815 *to* 1826.	*Towns.*	*Country.*	*Towns.*	*Country.*
June, . .	58730	125026	0.918	0.862
July, . .	57151	121512	0.893	0.838
August, .	59620	131657	0.932	0.906
September, .	62731	144389	0.980	0.995
October, .	62500	146362	0.977	1.009
November,	64273	146285	1.005	1.009
December, .	65120	148186	1.018	1.022
Average,	63983	145026	1000	1000

From the table just given, it appears that the influence of season is more decided in the country than in towns, which is what we should have expected, since the inequalities of temperature are more felt in the former than in the latter. The greatest number of births occurs in February, and the smallest in July, and hence it follows, that most conceptions take place in May, and fewest in October. We shall come to the same result, whether we take the numbers by quarters or half years. Most conceptions take place during summer. M. Quetelet asks whether we may not conclude from the above, that the climates most favourable to fecundity are those which enjoy a mild temperature, and that excessive heat or cold injures propagation. Whatever may be thought of this suggestion, our readers will have little difficulty in agreeing with M. Villermè, quoted by the author, that the influence, direct or indirect, of the annual revolution of the earth round the sun, of the great variations of temperature produced by this revolution, and of certain meteorological states, on conception and consequently, on the number of births is evident. Although, however, this may be considered as proved, in respect to the northern hemisphere, by the inquiries instituted into the subject, by different statisticians, it would be at least satisfactory to ascertain, whether the same takes place in the southern hemisphere, because if this should be found to be the case, the most sceptical will be satisfied. Now, M. Villermé has been able to procure returns only from one place, the republic of Buenos Ayres, and according to these, those months in which the greatest number of births takes place are July, August, and September, that is in winter, those in which the least, January and May, that is in summer. Thus it appears that in the southern as well as in the northern hemisphere, most conceptions occur in the summer months, and most births in the winter.

Curiosity led M. Quetelet to inquire whether there was any connection between the different hours of the day, and the number of births. Dr Guiette, attached to the Lying-in Hospital of Brussels, furnished him with results for eleven years, from 1811 to 1822, and M. Villermé found them agree with those which he obtained from the Lying-in-Hospital at Paris. The following table exhibits Dr Guiette's observations, both for the eleven years alluded to, and also for two additional years, 1827-8.

Hours.	*Births.* 1811-22.	*Still Born.* 1811-22.	*Births.* 1827-28.
After midnight, .	798	53	145
Before mid-day, .	614	51	119
After mid-day, .	574	59	119
Before midnight, .	694	55	148
Total, .	2680	218	531

From these numbers it would appear that the proportion of children born during the night to those born during the day is very nearly as 5 to 4.

Dr Buek of Hamburgh also made several observations, the result of which will be found in the following table, the numbers being reduced to proportions of 1000.

Birth.	*Winter.*	*Spring.*	*Summer.*	*Autumn.*	*Average.*
After midnight, .	325	320	291	312	312
Before mid-day, .	270	252	256	216	249
After mid-day. .	190	136	189	225	183
Before midnight, .	215	292	264	247	256

Proportion of the night to the day 1.31 to 1.

The influences already considered are those which M. Quetelet reckons natural. We now come to the disturbing influences of profession, morality, religious and political institutions.

The influence of profession would appear to be masked by other circumstances, in such a manner as to prevent us in the present state of our knowledge from appreciating its force. The only conclusions that can be drawn from inquiries already made is that it is not powerful, and that it principally depends upon the quantity and nature of the aliments, and the developement of physical power.

In respect to the influence of morality, it may be observed that concubinage produces fewer male children. The same will be the result of all enervating habits, which, it is well known, lessen the number of conceptions. Prostitutes produce very few children or are barren. Precocious connection between the sexes has similar effects, or leads to the production of children who have less chance of living.

M. Quetelet agrees with most political economists, that habits of order and forethought diminish the number of marriages, and consequently of births, and that, on the contrary, misery and ignorance produce the opposite effects. He is also of opinion that the fecundity of marriage is lessened by prudential habits. We suspect few individuals are so philosophical in this respect as to limit the supply to the demand. Prudential motives may prevent marriages, but we hardly think that, when the connection is once formed, an individual will find it possible to control so completely the usual results, as M. Quetelet takes it for granted he can, though he has not stated the means by which it is to be accomplished.

Two facts worthy of notice are mentioned by M. Quetelet, 1*st*, that the epoch of the greatest number of conceptions corresponds nearly to that in which the most rapes and attempts upon chastity are committed; 2*d*, that the proportion of illegitimate to legitimate children is very large, and in some places on the increase. Mr Babbage, in his letter to the Right Honourable T. P. Courtenay, states the proportion of illegitimate to legitimate children in the under-mentioned countries to be as follows.

Country.	*Illegitimate to* 1000 *Legitimate.*	*Legitimate to* 1 *Illegitimate.*
France,	69.7	14.3
Kingdom of Naples,	48.4	20.6
Prussia,	76.4	13.1
Westphalia,	88.1	11.4
Cities of do.	217.4	4.6
Montpellier,	91.6	10.9

The number of illegitimate children in the cities of Westphalia, though enormous, is, as we shall see, much below that in Paris. About fifty years ago, at Stockholm, Göttingen, and Leipsic, the sixth of the births was illegitimate; at Cassel the fourth; at Jena the seventh. The following view exhibits the progress of female debasement at Berlin.

Periods.	*Total Births.*	*Illegitimate Births.*	*Proportion.*
1789 to 1793,	26572	2824	9 to 1
1794 to 1798,	30165	3006	9 to 1
1799 to 1803,	31538	3800	8 to 1
1804 to 1808,	30459	4941	6 to 1
1819 to 1822,	26971	4319	6 to 1
From 1789 to 1822,	145705	18890	to 1

The following table exhibits the state of Paris in this respect.

	Births.		
	Legitimate.	*Illegitimate.*	*One illegitimate birth to legitimate.*
1823,	27070	9806	2.76
1824,	28812	10221	2.82
1825,	29253	10039	2.91
1826,	29970	10502	2.85
1827,	29806	10392	2.86
1828,	29601	10475	2.81
1829,	28721	9953	2.88
1830,	28587	10007	2.85
1831, *	29530	10378	2.83
1832,	26283	9237	2.84
Average.	287633	101010	2.84

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* These numbers do not comprehend 1099 and 1065 children recognized and legitimized after their birth.

Thus of every 28 births in Paris 10 are illegitimate. This is the most deplorable picture of libertinism which has as yet been presented in an authentic form.

In reference to the effect of civil and religious institutions, M. Quetelet remarks that nothing appears to favour reproduction more than peace and plenty. In opposition to this it has been stated, that during the reign of Napoleon, though destructive wars then raged, the French population, far from decreasing, increased in a greater ratio than before, while the number of deaths was less; and that, on the other hand, when peace came, the mortality became greater. The researches of M. D'Ivernois, however, show that the statement is altogether incorrect. The number of deaths appears to have been somewhat greater in the first years of peace, but it must be recollected that, during the reign of Napoleon, the tables of mortality did not embrace those who perished in battle or died in military hospitals, whereas after the restorations all such casualties were included in the general account.

M. Quetelet agrees with other writers in thinking that political and religious prejudices have, to a certain extent, influenced reproduction. As long as a large family was looked upon as a special mark of the favour of heaven, and encouraged not only by governments but by political economists, from whom we might have expected sounder opinions, the great mass of the people acted upon these views, to as great an extent as other counterbalancing circumstances would permit, and so far consequently the population of states was increased. Monastic vows must have tended considerably to keep down the numbers of mankind, and the researches of M. Villermé show that the observance of Lent, as it was formerly kept, had a marked effect on diminishing the number of conceptions which took place during the time it lasted. The destruction of religious houses at the Reformation, and the scattering of their inmates at that period, and afterwards during the French Revolution, together with the less austere manner in which Lent and fasts have lately been kept, must have proved so many means of increasing the number of the inhabitants of Europe.

It has been stated above that the epoch at which marriage takes place influences the number and sex of the children. It appears, however, from the researches of M. Villermé that the connection between the month in which the ceremony is celebrated, and the conceptions which follow, is scarcely appreciable; that marriages appear to be a little, but a very little, more fruitful during the first months than afterwards, and that, however likely it may be, there is no positive proof that a woman has more chance of becoming pregnant during the first days or weeks after her marriage when it takes place in April, May, June, or July, than if it had occurred in any of the other months of the year.

Connected with the inquiries of the results of which we have now given a brief summary, is the proportion of still-born children. The following table exhibits this proportion in some of the districts and cities of Europe, with the authorities.

Places.	*Proportion of births to 1 still-born.*	*Authors.*
Strasburg,	11	Friedlander.
Hamburgh,	15	Casper.
Dresden.	17	Rambach.
Paris,	19	Baumann.
Berlin,	20	Casper.
Vienna,	24	Do.
London,	27	Black.
Brunswick,	33	Rambach.
Stockholm,	36	Wargentin.

The proportion, then, is about 1 in 22, which differs little from that of Berlin, where it has continued nearly the same for more than sixty years. The reader will not fail to remark that some of the numbers in the table just given were taken several years ago, and that a considerable change may in all probability have taken place in the interval, in consequence of the advancement of medical knowledge, and the abandonment or abatement of absurd prejudices.

From the researches both of Casper and the author, it appears that the proportion is much larger in towns than in rural districts, which M. Quetelet seems inclined to attribute in a great measure to tight lacing. The number of male children who thus perish is greater than that of female, and the proportion varies in different places. In Western Flanders it is about 14 to 10; in Berlin, from 1785 to 1794, it was 15 to 12, and from 1819 to 1822, about 15 to 10; in Amsterdam, from 1821 to 1832, as 12 to 16; in Paris somewhat less, and in Denmark about the same. We consider the explanation which M. Quetelet gives of this phenomenon to be unsatisfactory. He thinks that if a conjecture is to be hazarded on this subject, the conception of a male infant supposes a certain excess of power in the woman, that she ought to have the same excess during pregnancy, and that if this be wanting the child will suffer much more if a boy than a girl. It is evident also, he continues, that women residing in towns, who are more delicate than those living in the country, will have a greater chance of producing dead children, especially if they should be male. To us it appears that it is more reasonable to suppose that, as male children are larger than female, the chance of their coming into the world alive, if the mother's pelvis be at all deformed, is less than that of female infants, and that, as such deformities are more common in towns than in the country, such accidents will be more frequent in the former than in the latter.

M. Quetelet has endeavoured to ascertain at what times of the year most children are still-born, and the result is, that winter is more unfavourable than summer.

The circumstances which seem to have some influence in producing this unfortunate result are stated by Casper to be illegitimacy, venereal diseases, abuse of intoxicating liquors, &c. Thus at Göttingen the proportion of illegitimate to legitimate children who perished in this manner was as 5 to 1, and in Berlin formerly as 3 to 1. In the latter city there was little improvement so late as 1819–22, the proportion being rather more than two to one. This might have been expected, both from the want of care and greater hardships to which these unfortunate little beings are exposed, and from the parents in many cases being in a weaker state of health. In the venereal hospital at Paris, M. Duges estimated the proportion of premature births to be two out of six or seven. At Hamburgh, in 1820, in a house where there were scarcely any but prostitutes, affected with the venereal, of 18 illegitimate infants 6 were still born; and in another establishment in the same city, occupied in part by the women of the town, the proportion was 11 in 93.

In considering the mortality of children at their birth, it may not be amiss to ascertain the fate of the mothers. According to Willan, in the London Lying-in Institution, where 5000 patients were annually received, the loss of mothers and children was as follows:

	Mortality of Mothers.	*Mortality of Infants.*
1749 to 1758,	1 in 42	1 in 15
1759 to 1768,	1 in 50	1 in 20
1769 to 1778,	1 in 55	1 in 42
1779 to 1788,	1 in 60	1 in 44
1789 to 1798,	1 in 288	1 in 77

According to Bisset Hawkins, the mortality in the same institution, among the mothers, in 1826, was 1 in 70. The same authority states, that in the Lying-in Hospital of Dublin, from 1757 to 1825, the proportion of children dying in the house was 1 in 19, of the still-born 1 in 17, and of the mothers who perished 1 in 89. According to Dr Collins, whose interesting work we lately noticed, the proportion of still-born children in the same hospital in seven years, from 1826, was very nearly 1 in 16. The deaths of the mothers amounted to about 1 in 100. But if we subtract those not the result of labour, the proportion will be reduced to 1 in 244. According to Tenon, the mortality at the end of the last century, among mothers confined in the Hotel Dieu of Paris amounted to 1 in 15. In 1822 it was reduced to 1 in 30, it being 1 in 29 at the same period at Stockholm; and in the Lying-in Hospital of Edinburgh, during 1826, 1827, and 1828, it was only 1 in about 100. The following table gives the results for Berlin, as ascertained by Dr Casper.

		Proportion.
1758 to 1763,	.	1 in 95
1764 to 1784,	.	1 in 82
1785 to 1794,	.	1 in 141
1819 to 1822,	.	1 in 152

It is curious that the highest and lowest rate of mortality among mothers occurred at the end of the last century, the former being in Paris 1 in 15, and the latter in London 1 in 288.

II. MORTALITY.—Our summary of the author's observations on the influence of natural causes on mortality must be very brief; and we are the more inclined to follow this course, because there is little in them which is new to those who have paid any attention to the subject.

Dividing Europe into three regions, north, middle, and south, it appears from the documents quoted by M. Quetelet that the rate of mortality is as follows:

North,	1 in 48.5
Middle,	1 in 30.75
South,	1 in 33.66
Average	1 in 37.48

M. Quetelet considers, however, that the following is nearer the truth.

North,	1 in 41
Middle,	1 in 40.8
South,	1 in 33.7
Average,	1 in 38.15

The lowest rate of mortality occurs in England, it being only 1 in 51, and the highest in Russia, 1 in 21. If England be excluded from the calculation, the central part of Europe will exhibit the smallest proportion of deaths.

The following table exhibits the rate of mortality in situations nearer the equinoctial line.

Latitude.	*Place.*		*Rate of Mortality.*	*Authority.*
6°, 10′,	Batavia,	-	1 in 26	Moreau de Jonnès.
10, 10,	Trinidad,	-	1 in 27	Do.
13, 54,	Sante Lucie,	-	1 in 27	Do,
14, 44,	Martinique,	-	1 in 28	Do.
15, 59,	Guadeloupe,	-	1 in 27	Do.
18, 36,	Bombay,	-	1 in 20	Do.
20, 51,	Isle of Bourbon,	-	1 in 44.8	Thomas.

23°, 11',	Havannah,	1 in 33	Moreau de Jonnès.
34, 23,	Cape of Good Hope,	1 in 51	Bisset Hawkins.

Several other documents are quoted by M. Quetelet, and from these and the results which we have now given, it would appear that both in the northern and southern countries, as well as in those approaching to the equator, the rate of mortality is greater than in temperate regions. The mortality is greater in towns than in country districts.

There is a considerable difference between the sexes in the rate of mortality. Towards birth more male infants die than female. About the age of two the mortality of the two sexes becomes nearly the same. That of females after this period increases, till between 14 and 18 years of age, or after puberty, the difference becomes very distinct. Between 20 and 26, the epoch of the most active passions, the mortality of the male exceeds that of the female. Between 26 and 30, the usual period of marraige, the proportion is equal. Among women, however, during the period of fecundity. the number of deaths is rather increased. Afterward the age of reproduction the rate is diminished, and the two sexes drop off in the proportion in which they have been left at this period. The great mortality of women in the country during the period of child-bearing, observed on the continent, may be accounted for by the severity of the labours to which they are exposed at the very time when their health requires great care.

M. Quetelet presents us with an elaborate table of the proportion of the deaths of either sex from the age of one month to that of 104 years. From this the following results may be deduced. At the period immediately after birth the probable life is 25 years; in other words, at the age of 25 only one-half of the children born at the same time will be alive. The probable life of the female is greater than that of the male, the former being 27 in the country, and more than 28 in towns, the latter less than 24 in the country, and less than 21 in towns.

In both sexes and in all situations, the probable life is longest about the age of five;—being 51 for women in towns and men in the country, and 48 for women in the country and men in towns. The farther we advance from this period, the shorter the probable life becomes. Thus at the age of forty it is 27 for men in the country and women in towns, and 25 for men in towns. At sixty it is from 12 to 13, and at eighty only 4.

The mean life in Belgium is 32.15 years. Considering sex and place of abode, it is as follows:

	Towns.	*Country.*
Men, .	29.24	31.97
Women, .	33.28	32.95

According to Mr Rickman, the mean life in England is 33, being 32 for men and 34 for women. In France it is 32.2. These calculations suppose the population to be stationary, but as this is not the case they lead to erroneous results.

One-tenth of the children born dies within the first month, the mortality at this period being equal to that between 7 and 24, or between 24 and 40; or that of all who survive the age of 76. Within the first year, the number of male children is reduced by a fourth, and in cities of 10,000 only 5738 reach their fifth year.

From the facts collected by M. Villermé, it appears that the epidemics which attack all ages are most fatal to those at the two extremities of life, and that the mortality of an epidemic follows the general law of the mortality of age.

In remarking on the influence of particular years on the rate of mortality, M. Quetelet takes occasion to point out an error into which Mr Sadler and others have fallen, in supposing that the effect of famine or war in increasing the number of deaths, should be apparent in those very years in which such famine or wars occurred. He justly remarks, that this influence will not become visible for several months or even a year after its appearance, and it may happen in the case for instance of a dearth, that the price of provisions may fall precisely at the period when the increased rate of mortality appears on the registers. This is easily explained. The effects of famine or war will not exhibit themselves immediately. A certain time must elapse before the evil results appear, and just at this moment peace and plenty may return. If the precaution be taken to include three or four years in each of the periods chosen for comparison, the result will be exactly that which might have been *a priori* come to, that the rate of mortality will be increased in proportion to the privations to which the great body of the population is exposed.

The following table exhibits at a glance the influence of seasons on mortality :

Months 1815 to 1826.	*Deaths.*		*Proportion.*	
	Towns.	*Country.*	*Towns.*	*Country.*
January, .	59892	116129	1.158	1.212
February, .	56267	114758	1.088	1.198
March, .	54277	114244	1.050	1.192
April, .	51818	107264	1.002	1.120
May, .	48911	93714	0.946	0.978
June, .	46607	84464	0.901	0.882
July, .	45212	77555	0.874	0.809
August, .	47032	78802	0.910	0.822
September, .	50191	85131	0.971	0.888
October, .	51649	89514	0.999	0.934
November, .	52908	89585	1.024	0.935
December, .	55631	98705	1.076	1.030
Average,	51700	95822	1.000	1.000

From this it appears, that the fewest deaths take place at that period of the year when men have least to fear from the inclemency of the weather. This period coincides also with that during which most conceptions occur. It is clear that civilization can do much to modify these results.

M. Quetelet has furnished a very interesting table of the comparative mortality of different ages in each month, which we transfer to our pages.

Table showing the influence of age and season on mortality.

Age.	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.
0 to 1 mo	1.39	1.28	1.21	1.02	0.93	0.83	0.78	0.79	0.86	0.91	0.93	1.07
1 to 3	1.39	1.18	1.15	0.95	0.89	0.82	0.83	0.94	0.83	0.92	0.97	1 13
3 to 6	1.24	1.06	1.02	0.90	0.95	0.95	0.99	1.06	0.99	0.94	0.86	1.02
6 to 12	1.28	1.21	1.27	1.18	1.06	0.84	0.76	0.87	0.81	0.82	0.86	1.03
12 to 18	1.10	1.11	1.24	1.30	1.25	1.03	0.88	0.81	0.74	0.77	0.78	0.98
18 to 24	1.23	1.18	1.21	1.18	1.03	0.84	0.80	0.76	0.75	0.81	1.01	1.18
2 to 3 years.	1.22	1.13	1.30	1.27	1.12	0.94	0 82	0.73	0.76	0.78	0.91	1.01
3 to 5	1.23	1.16	1.26	1.29	1.13	0.94	0.78	0.74	0.73	0.79	0.89	1.05
5 to 8	1.29	1.17	1.32	1.24	1.20	0.96	0.78	0.74	0.76	0.75	0.85	1.02
8 to 12	1.08	1.06	1.27	1.34	1.21	0.99	0.88	0.82	0.81	0.76	0.80	0.96
12 to 16	0.95	0.95	1.14	1.14	1.19	1.04	0.97	0.95	0.96	0.81	0.86	1.04
16 to 20	0.93	0.94	1.07	1.18	1.15	1.03	1.00	0.99	0.89	0.87	0.95	1.01
20 to 25	0.97	1.00	1.09	1.02	1.09	0.96	0.90	0.92	0.96	0.95	1.03	1.11
25 to 30	1.05	1.04	1.11	1.06	1.02	1.02	0.91	0.96	0.95	0.93	0.97	0.97
30 to 40	1.11	1.13	1.11	1.04	0.99	0.92	0.85	0.94	0.99	0.95	0.94	103
40 to 50	1.17	1.15	1.13	1.05	0.99	0.86	0.86	0.94	0.93	0.87	0.95	1.11
50 to 65	1.30	1.22	1.11	1.02	0.93	0.85	0.77	0.85	0.89	0.90	1.00	1.15
65 to 75	1.43	1.32	1.18	0.99	0.91	0.77	0.71	0.80	0.88	0.86	0.98	1.17
75 to 90	1.47	1.39	1.16	1.01	0.87	0.77	0.67	0.75	0.84	0.84	1.00	1.21
90 & above.	1.58	1.48	1.25	0.96	C.84	0.75	0.64	0.66	0.76	0.74	1.03	1.29
Average.	1.26	1.20	1.17	1.08	1.00	0.88	0.80	0.84	0.86	0.86	0.94	1.09

Few inquiries seem to have been made into the influence of particular periods of the day on mortality. The results obtained by M. Quetelet differ from those of Dr Buek, as will be seen below.

I. M. Quetelet.

Hours.	*Deaths.*
12 to 6 A. M. .	1397
6 to 12 A. M. .	1321
12 to 6 P. M. .	1458
6 to 12 P. M. .	1074
	550

I. Dr Buek.

Period.	*Win.*	*Spr.*	*Sum.*	*Aut.*	*Aver.*
After midnight,	315	321	292	281	306
Before mid-day,	243	260	236	220	242
After mid-day,	194	211	220	227	211
Before midnight,	248	207	252	272	241

No positive conclusion can be drawn from such limited *data.*

M. Quetelet next considers the influence of disturbing causes on the number of deaths. These are, professions, morality, intelligence, and political and religious institutions. Statisticians have already proved that the mortality in manufacturing districts is greater than that in agricultural, and greater also in towns than in rural districts. Wealth, or at least competence, is also ascertained to be more favourable than poverty to longevity. Among negroes who are slaves, the annual mortality is 1 in 5 or 6, while among negroes serving in the British army it is only 1 in 33.3. According to Bisset Hawkins, the mortality among our marines was 1 in 42 in 1813, and that of our land troops still less. In France, according to M. Chateauneuf, the mortality of the soldier is greater than the average; that of the Guards less than that of the army, and that of non-commissioned officers in both, less than that of privates. M. Quetelet quotes some important facts in reference to the influence of seasons on the mortality of troops, and gives from M. Lombard a general list of professions according to their liability to phthisis, of which notice has already been taken in the 45th volume of this Journal.

The following table from Casper gives some notion of the expectancy of life in different professions.

Professions.	*No. of* 100 *who reach* 70 *years of age.*
Theologians, ...	42
Agriculturists and foresters, . .	40
Superior clerks, ...	35
Merchants and manufacturers, .	35
Military men, ...	32
Inferior clerks, ...	32
Advocates, ...	29
Artists, ...	28
Teachers and professors, . .	27
Medical men, ...	24
Average, .	32.4

From this table it would appear that mental occupation is more prejudicial to life than bodily fatigue; that the most favourable to longevity is a sedentary life not exposed to any excess; and that the most unfavourable is that in which mental and bodily exertion are combined. The following view exhibits in a marked manner the difference between the extremes.

Of 1000 deaths in each profession there will be

Age.	*Medical men.*	*Theologians.*	*Proportion of former to latter.*
23 to 32,	82	43	1.91
33 to 42,	149	58	2.57
43 to 52,	160	64	2.50
43 to 62,	210	180	1.17
63 to 72,	228	328	0.70
73 to 82,	141	257	0.55
83 to 92,	30	70	0.43
	1000	1000	

M. Quetelet offers some observations on the comparative liability of different ages, and of the two sexes, to stone. From the tables which he gives, it appears, that of 2648 patients affected with stone in different cities, 1327 were under 10 years of age; 562 between 10 and 20; 215 between 20 and 30; 130 between 30 and 40; 129 between 40 and 50; 159 between 50 and 60; 106 between 60 and 70; and 15 above 70. In 4872 cases, the proportion of female patients to male was as 1 to 21.14.

In the section devoted to the consideration of the influence of morality on the number of deaths, M. Quetelet shows that the ratio of deaths of illegitimate children is about double that of legitimate, and that Foundling Hospitals, so far from being the means of preserving life, seem to have an opposite effect. Every fact brought forward on this subject tends to corroborate the conclusions of M. De Gouroff, that wherever asylums are opened indiscriminately for all infants abandoned at their birth, the number of such unfortunate beings is greater than elsewhere:—that the mortality in such asylums is frightful, and far beyond the extreme of that to which infants of the most indigent classes of society are exposed;—that infanticide is scarcely prevented by Foundling Hospitals; or rather, that for the purpose of preventing a few infanticides, these institutions destroy an incomparably greater proportion of infants than would have perished in any other way.

The spread of intelligence has an undoubted effect in increasing the amount of human life. The general adoption of vaccination, the increased desire for, and consequent attainment of, comforts by the working-classes which, half a century ago, would hardly have been dreamed of by the middle-classes, have all had a beneficial effect in lessening the ratio of mortality. It is true that the notions of comfort to which we have just alluded tend to lessen the number of marriages, or at least of early marriages; but any diminution of the amount of children born, if any in reality exists, is more than compensated for by the greater length of life of those brought upon the stage, and what is implied in this, the greater number reared to maturity.

M. Quetelet next notices the mortality in different jails, hospitals, and work-houses. The most of his facts have already been laid before the public. From a consideration of the whole it would appear, though the author has not drawn the conclusion, that the rate of mortality of the inhabitants of prisons, hospitals, and work-houses, under proper regulation, ought, *cæteris paribus*, to be considerably less than that of other classes of the community.

The remainder of the first volume is devoted to the consideration of that branch of political economy which comprehends the law or principle of population, and the doctrines which may be deduced from. Connected as this subject is with political doctrines, and foreign to the objects of this Journal, we pass it over with the remark, that it will be found not less interesting than the other portions of the work.

III. HEIGHT, WEIGHT, INSPIRATION, PULSE, SWIFTNESS AND AGILITY OF MAN AT DIFFERENT AGES. At first sight, the determination of the height, and weight, and physical developement of man at different ages, appears to be a subject of little interest, and hence till M. Quetelet began the investigation, little or nothing was ascertained regarding it. The inquiries previously made had been directed to his height and weight at the periods of birth and full developement. These were ascertained at the former period, in reference to the medico-legal questions connected with infanticide, and at the latter merely as a matter of curiosity. Independently of the interest of the subject to the physiologist, it is necessary to procure the means of solving a medico-legal question which may be proposed, *vix.* to determine, by means of his physical qualities, the age of an individual who is dead.

1. *Developement of Stature.*—M. Quetelet gives numerous observations made on different classes in different countries, and by various individuals, which our limits will not permit us to quote. The results, however, of the whole, may be thus summed up in the following aphorisms.

1*st*, The limits of growth in man and woman are not the same, because the latter at birth is smaller than the former; her developement is sooner completed, and her annual growth is less.

2*d*, The stature of inhabitants of towns exceeds that of inhabitants of the country at nineteen years of age, by two to three *centimètres.*[*]

3*d*, The growth of man does not seem to be fully terminated at the age of twenty-five.

4*th*, Individuals living in easy circumstances usually exceed the average height. Wretchedness and fatigue diminish it.

5*th*, The successive additions to the stature of the individual from a period many months antecedent to birth, to the period of full developement, diminish in amount as the age increases.

6*th*, The most rapid increase takes place immediately after birth, the growth of the child within a year being two decimètres.

7*th*, The increase diminishes in a direct ratio to the age, till the fourth or fifth year, thus during the second year it is only a half of the first, and in the third only a third.

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[*] A French *mètre* is equal to 3.28 English feet, a decimètre is the tenth of a mètre, the centimètre the hundredth, and a millemètre the thousandth.

8th, From the fourth or fifth year to the sixteenth, or till after puberty, the increase is nearly regular, being annually fifty-six *millemètres*, or about the twelfth of that of the fœtus during the months preceding birth.

9th, After puberty the increase is not so marked, being at the age from sixteen to seventeen, four *centimètres*, and in the following two years, only two and a half.

10th, After fifty years of age, the height both of men and women is more and more sensibly diminished, till about eighty, the diminution is about six or seven *centimètres*.

2. *Weight at different ages.*—In the portion of the work devoted to the consideration of this subject, we find the same acuteness and industry displayed, as in the other parts of the work. We subjoin a brief statement of the results.

1st, Children of both sexes differ at birth in weight as well as in length. Of 119 infants weighed at the Lying-in-Hospital at Brussels, the minimum of females was 2.34 *killogrammes*,* and the maximum 4.50;—the minimum of females 1.12, and the maximum 4.25.

2d, The weight of the infant diminishes immediately after birth, and does not begin sensibly to increase till after the first week.

3d, The ages being equal, the male is generally heavier than the female. The weight is equal only at the age of twelve. Between one and eleven, the difference of weight is from one *killogramme* to one and a half, from sixteen to twenty it is about six, and after that age, from six to nine.

4th, At the period of full developement, the weight of the body is nearly twenty times what it was at its birth, while the height has increased only three and a fourth.

5th, In old age, both the male and the female lose about six or seven *killogrammes* of their weight, and about seven *centimètres* of their height.

6th, During developement, the square of the weight of the body may be regarded as proportional to the fifth power of the height. After complete developement the weight is nearly the square of the height. From this it results, that the longitudinal increase is greater than the transverse, including both breadth and thickness.

7th, The weight of man is greatest at forty, and begins sensibly to diminish at sixty years of age.

8th, The weight of woman is greatest at fifty. From eighteen to forty years of age, the period of fecundity, it is scarcely sensibly increased.

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* A *killogramme* is equal to 18827.15 grains.

9th, The weight of individuals fully developed varies from one to two, while the height varies only from one to one and a third.

10th, The stature being equal, woman weighs a little less than man, till the height reaches 1.3 *mètre*, which corresponds to what it is at the age of puberty. When the height is greater, the female weighs a little more than the male.

11th, The average weight, regard being had neither to sex nor age, is 45.7 *killogrammes*. Estimating that of the sexes separately, it is 47 killogrammes for man, and 42.5 for woman.

3. *Developement of strength.*—M. Quetelet, after pointing out the difficulties and fallacies attending the investigation of this subject, and quoting and commenting upon the results obtained by Regnier, Peron, Ransonnet, Freycinet, and Bailly, gives a table of the strength of the loins possessed by both sexes at different ages, as ascertained by dynamomètre.

From this it appears that there is less difference between them during infancy than after full developement. During infancy the lumbar strength of the male exceeds that of the female by about a third, about puberty by a half, and at the period of complete developement it is double. The profession of the individual modifies the strength.

From another table of the manual strength of the sexes at different ages, M. Quetelet concludes that that of the male at all ages is greater than that of the female, the difference being generally less in early life. Before the age of puberty the ratio is as 3 to 2, and afterwards as 9 to 5.

4. *Respiration and Pulse.*—In well-formed healthy individuals, the number of inspirations, and of the beats of the heart ranges within certain limits which vary according to age. From the days of Kepler to the present time, authors have differed considerably in their various estimates. These have lately been examined by Dr Knox, in a paper published in the 131st Number of this Journal, and as M. Quetelet's facts and deductions have there been very fully given, we shall not occupy the time of the reader by repeating them here.

5. *Swiftness*, *Agility*, *&c.*—Many observations and experiments are required before any general conclusions can be formed on these subjects. The following facts, however, have been ascertained by M. Ch. Dupin. A man can march six *kilomètres* * in an hour on a long march. This gives 100 *mètres* a minute, and estimating the length of the pace at eight decimètres, 125 steps are made in a minute and 7500 in an hour. This may be continued for eight hours and a half each day for any length of time without injury to the health or strength. The

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* A kilomètre is 1000 mètres, is 1093.63 yards.

average weight of a man with his usual clothes is 70 *kilogrammes;* and thus a traveller each day transports 70 kilogrammes to the distance of 51 *kilomètres,* or, what comes to the same thing, 3570 *kilogrammes* to the distance of 1 *kilomètre.*

According to the same author, the length of the military step is 65 centimètres. In ordinary time the soldier takes 76 steps; in quick time, 100; and in a charge, 125.

The mean length of a man's leap is about three times that of the military step.

The remainder of the work is devoted to the consideration of the moral and intellectual qualities of man—the properties of the average man—the social system, and the farther progress of their study. This portion, though highly interesting, we must pass over, as it involves the consideration of subjects and questions which cannot be discussed in a Journal like this. By most readers this portion will be looked upon as the most interesting; and it would be injustice to omit to state, that the author's most original views are to be found here.

We now take leave of these volumes, bestowing on them the highest commendation, in recommending them, not merely to the perusal, but to the serious study of our readers.

ART. II.—*Mémoires de l'Academie Royale de Medecine,* Tome iii. 4to. pp. 522. Paris, 1833.

IN resuming our account of this work, we have much pleasure in laying before our readers, as the first article in the third volume, a memoir of the *Baron Cuvier* by *M. Pariset,* the Permanent Secretary of the Academy. This great man was born in the year 1769, at Montbéliard, then in possession of the Dukes of Würtemberg, to whom this little principality passed by marriage in the year 1397, after having been for 500 years in the possession of its own Counts. His father was an officer in a Swiss regiment in the service of France, to which Montbéliard became subject in 1794; and his mother, a woman of great merit, to whom he owed, like many other great men, very important advantages, also belonged to the same state. Cuvier's earliest youth was distinguished by devotion to mental exercises.

On coming from school, he used to sit on a stool by his mother, with a book in his hand, listening to her kind and endearing instructions; and he soon became much attached to works of history, of voyages and travels, and philosophy. But most of all, he was delighted with *Buffon,* whose works he might be almost said to have by heart. When quite a child, he attained great proficiency in drawing; and by the age of 13, he had copied Buffon's thousand and eight coloured plates of birds, by which sort of exercise, his eye acquired a quickness and facility of perception, which were of important service to him during his whole life.

He was intended for the Church and began his studies in theology at Montbéliard. At the age of 14 it was necessary that he should be entered at Tubingen; but as the admissions were by a concours, for the students were educated at the expense of the State, he presented himself, and failed, owing to the animosity of a professor whom he had offended by his raillery. He was soon, however, invited to Stuttgard, by his sovereign, the reigning Duke, and placed in the Gymnasium, where he continued four years, during which time he studied eagerly mathematics, natural history, law, and above all, technology, which may be defined the knowledge of public business, *(la Science de l'Administration.)*

His views even, at the time of his quitting Stuttgard, were limited to some official situation in his native state, which might consist of fifty villages, and a capital containing 4000 or 5000 inhabitants; but he was at this time invited by *M. Parrot*, a fellow student of his, who was offered an establishment in Russia, to succeed him as tutor in the family of *M. d'Héricy*, a Protestant gentleman of Fiquainville in Normandy, an appointment which he gladly accepted. Thither he therefore went in the year 1788, at the age of 19, and continued till the education of his pupil was finished in the year 1795, when he went to Paris at the earnest solicitation of the *Abbé Tessiér*, who had escaped the persecutions of the metropolis, and took upon himself the functions of a physician at Fécamp. Cuvier was then 26; and he had employed the whole period of his residence in Normandy in cultivating most sedulously an acquaintance with the natural history and comparative anatomy of animals, particularly of insects, fish, and the mollusca. As the institution of popular assemblies was at that time the order of the day, he very judiciously and successfully pressed the formation of an institution among the principal landholders of the district, which, instead of occupying itself with political discussions, was devoted to agricultural researches, with Cuvier as its secretary.

Immediately on his arrival at the capital, Cuvier was nominated Member of the Commission of Arts, and Professor of Natural History at the central school of the Pantheon. Soon afterwards when *Mertrud*, the friend of Buffon, and fellow labourer with Daubenton, who had for fifty years been the demonstrator of anatomy in the Jardin des Plantes, was appointed to the chair of comparative anatomy, Cuvier was nominated to perform the active duties of the office; and thus was he, in six months from his quitting the country, introduced into that noble establishment, to which he was destined, by his energy and his talents, to impart so much additional celebrity. His father and his brother Frederic, the only remaining part of his family, were then brought to Paris to reside with him.

In December 1795, Cuvier began his first course of lectures, and his "Leçons d'Anatomie Comparée" appeared in five successive volumes, between the years 1801 and 1805, but he published in the interval various interesting memoirs connected with the same subject; and in 1798, his Tableau Elementaire d'Histoire Naturelle. A few weeks only before his death, he reviewed the first volume of his Leçons, and prepared a new edition of it, in concert with Duvernoy. His Règne Animal appeared in 1817, and the second edition of it in 1829; but a projected work, under the designation of Grande Anatomie Comparée, has not been carried into effect. Very early in his career the attention of Cuvier was directed to the fossil bones, and the strata in which they were deposited in the Parisian Basin. The new world of observation to which he thus was led, gave rise to the most brilliant results, and brought into operation all the estimable qualities for which he was distinguished. Such was the correctness and extent of his knowledge, that he would often, from the slightest indication, as the fragment of a bone, a phalanx, or a small articular facet, reconstruct the whole animal. This done, he communicated the result to the Institute. "They hear him with distrust, they doubt, they dispute, they deny. But in a few days afterwards the whole skeleton of the animal is discovered; the conjectures of Cuvier become facts, and incredulity is converted into admiration."

The author of this memoir gives an interesting view of the progress, nature, and extent of Cuvier's labours, from which it is only necessary further to state, that after making many detached communications to the Annals of the Museum, he published, in concert with Alexander Brongniart, in four volumes 4to, the "Geographie Mineralogique des Environs de Paris." This work appeared in 1812; but in 1822 he found it necessary to publish a new modelled edition in seven volumes 4to, in which, besides his own discoveries, he gave an account of what had been done out of France during the whole interval.

Cuvier had a robust constitution, which seemed to promise him great length of days; but on the 8th of May 1832, during the prevalence of the cholera at Paris, the effects of which inspired him with apprehension, he attended the College of France, where he spoke much and eloquently. He was little fatigued; but on awaking the following morning felt a numbness in his right arm. He attended a meeting of the Council of State, surely a very imprudent measure, and on his return to dinner, found that he swallowed with difficulty. In a few hours the paralysis of the larynx and arm had extended itself over his whole body; respiration became difficult; and on Sunday the 13th, about ten o'clock in the evening, he died tranquil, resigned, with a perfect knowledge of his danger, and in complete possession of his faculties. On examination no cause of death was discovered; but the operators were struck with the size of the brain, and the depth of its sinuosities. So short and fatal a disease was regarded as affording an example of one of the anomalies of cholera.

With regard to his personal qualifications, the predominant characteristic of Cuvier is stated to be *a love of order*, of which his annual reports, during thirty years, in the progress of the sciences, which came under his particular attention at the Institute, afford memorable examples. For justice, candour, and moderation, he was eminently distinguished; and he exercised, very successfully, the duties imposed on him by the Government, of organizing the schools of the different countries which were under the dominion of France, during the sway of Napoleon. The intention was to bring the system of general instruction connected with them into harmony with that of France; but he saw in various countries reasons for modifying this principle of action. Viewing his commission as intended to create or to preserve, not to destroy, he formed in Italy, for example, a constitution tried by time, and consecrated by success. This he protected; and in Holland, some parts of Germany, and the Hanseatic towns, he met with institutions which tended to improve the morals of the people, and those he proposed to introduce into France. He was reserved to the world, but affable and communicative among his more intimate friends; and particularly to zealous and ingenious students. He was exceedingly charitable, but, above all, was eminently careful of his time. Every day, every hour, had its apportioned duties, and even in large society, and amid the fatigues and embarrassments of travelling, his intellectual labours never had a respite. He died at the age of sixty-three, having been born in the same year as *Bonaparte* and the *Duke of Wellington.*

The first memoir in this volume contains the *Report of a Commission of the Academy on an article by M. Ozanam, relative to the existence of arsenic in glass tubes.*

The inquiry originated in the circumstance of the author, and *M. Idt* of Lyons, having been employed to ascertain whether the death of a person who had been interred seven years, had been caused by poison. They discovered traces of arsenic; but M. Idt soon after retracted this opinion, and declared that the arsenic which they had obtained in their experiments arose from the glass tubes employed in conducting them; and hence an acquittal took place of the accused person.

In conducting the investigation, the commissioners examined several specimens of glass tubes made by different manufacturers, and some of those likewise which had been employed by Messrs Ozanam and Idt, but in none of them were any traces of arsenic to be found, except in one of dark glass of unknown origin, in which a minute portion of the yellow sulphuret was detected. When tubes were fabricated of glass purposely containing a $\frac{1}{300}$th and $\frac{1}{500}$th of oxyde of arsenic, arsenic could not be discovered; but if the quantity used was $\frac{1}{20}$th, a sort of white enamel was formed, which it would not be safe to employ in the formation of drinking vessels; nor could the latter be securely made of a glass containing so little as even the 500th part, unless the temperature employed in the fabrication was sufficiently elevated to make a transparent glass. In the latter case the atoms of arsenic used in manufacturing the glass are not only very much expelled by the heat, but such as remain fixed in its substance are incapable of being given out by chemical reagents in the performance of experiments. In some examples, where a fourth part of white oxyde of arsenic was added to a globule of glass by means of the enameller's lamp, the whole was dissipated by the heat of the blowpipe, so as to present not the smallest trace of arsenic. But if white sand and arseniate of potash are fused together, and a sufficient quantity of subcarbonate of soda added, there is formed a green glass, partly transparent and partly opaque, which contains arsenic, and is capable of exhibiting it by analysis. Even in this case, however, it would be in too small a quantity to be nocuous. But considering that the glass which is employed in the manufacture of chemical instruments has very rarely arsenic at all in it, and that when there is a small portion, it is wholly volatilized by the heat, so as to leave no sensible trace behind it, the commission agrees with M. Ozanam, as to there being no fair grounds of apprehending a doubtful result in experiments conducted in glass vessels for the purpose of ascertaining the existence of arsenic.

Remarks on the *inconveniences of percussion in the formation of pills which contain certain preparations of Mercury; by M. Planche.*

Long-continued percussion is generally recommended in the formation of pills, for the purpose of mixing more intimately the substances which compose them; but by this means mercury is very often brought back to its metallic form; to avoid which, percussion, the author thinks, should be entirely given up, and careful trituration alone employed for the purpose of mixing the substances sufficiently together.

Memoir on superficial cancers which are believed to be deep-seated, with observations on cases where patients have been preserved from the amputation of important organs; by J. Lisfranc.

The attentive study of cancerous affections has convinced the author, that diseases of this kind do not at once attack all the tissues of a particular part, and that extirpation, when it is had recourse to, may therefore be limited to one portion of an organ, without the necessity of its being attached to the whole. Cancer of the stomach, he found, was sometimes limited to the muscular coat, sometimes to the cellular which unites it to the villous; the pleura and peritonæum often oppose a barrier to the extension of cancers of the breast and umbilicus; and in affections of the penis, the *corpora cavernosa* frequently remain untouched. In applying these principles, the author was able, in the case of a diseased penis, by very careful and slow dissection, to remove the whole of the diseased portion, and leave a considerable part of the organ remaining. The same favourable result attended an operation on the scrotum and on the tongue, and he likewise had it in his power, successfully to remove a cancerous portion of the size of a six franc piece, from the inferior and posterior part of the vagina. He proposes a similar operation in carcinomatous affections of the rectum and *os uteri*; and he gives, in a subsequent part of the volume, another memoir on the excision of the inferior part of the rectum which has become cancerous.

In this paper he states, in the first place, his reasons for believing, that an operation of this kind, at the extremity of the rectum, may be practised with safety. The peritonæum terminates at six inches from the anus in women, and at four in men. The vessels at the extremity of the rectum may be opened without much inconvenience, and an oval incision made in the skin which surrounds the anus, which allows a diseased part to be conveniently reached. The cellular tissue which unites the rectum to the vagina in women, and to the urethra in men, allows a ready separation of those organs with the fore-finger during an operation, while he considers that there is a sort of second sphincter above the anus, which may come into use when the other is removed. M. Lisfranc, therefore, felt himself justified in attempting the cure of cancers of the rectum by incision; but he proceeded gradually from the more superficial description, to those which involved a portion of the sphincters, and then to the removal to the extent of even three inches and a-half of the inferior orifice of the rectum. The author mentions in detail the steps of his operation, and states, that of nine cases operated upon, six did well, and three died. But the chances of success he considers as being still greater than is here mentioned, if the disease is taken at an earlier period.

Medico-Legal considerations on Monomania; by M. Marc.

The criminal records of every country afford abundant evidence, that the scaffold in former times has had many victims, who would now be confined in lunatic asylums, or otherwise treated as insane. "It was reserved for *Pinel*," says the author, "to designate the extraordinary position in which, without any sensible aberration of the intellectual faculties, persons are led to acts which, in the eyes of the vulgar, are only explicable on the grounds of extreme depravity. At a later period, his distinguished pupil, *Dr Esquirol*, established and developed the doctrine of partial delirium, or monomania, which is characterized by a small number of fixed, dominant, and exclusive ideas, and even in one idea alone, to which the insanity is confined, the reason being, with regard to other objects, perfectly sound." Several examples are given of murders perpetrated by monomaniacs, some of which seemed to be the result of blind and instinctive impulse independent of the will, and others on certain processes of reasoning which it is difficult to understand or to develope. Various examples have occurred in this country, in which misplaced sympathy, and the love of the romantic, have elevated to a singular species of dignity, the perpetrators of some of the most heinous offences, and thus invested them with an interest which has sometimes had a powerful and unfortunate influence on weak and susceptible minds.

Of this effect the author gives an instance in the case of *Augusta Strohm*, who, when very young, had attended at Dresden the execution of a woman named *Schaefer* for murder. The care with which the culprit was prepared for death, the procession to the scaffold, the execution, produced on Augusta Strohm an impression of which she could never get rid; and from this time she thought that it would be the greatest blessing to end her life in the same way, to have the same preparation for death, and to have an exit equally edifying with that of Schaefer. The idea never quitted her; but her moral principles struggled against it, till the occurrence of another execution for murder, that of a man named *Kaltofen*, which took place at Dresden many years afterwards, when she was about thirty. The deportment of this man before the great number of persons who visited him in prison; the presence of a priest, who never ceased to pray with him; the hypocrisy of the culprit himself; the imposing appearance of the military escort which conducted him to the scaffold; the immense crowd of spectators, and the sentiment of compassion which, in spite of the enormity of the offence, depicted itself on the countenances of many of them; the calm aspect of the condemned person; his address to the people; the approach of the priest to soften the last moments of his life, together with the promptitude and apparent mildness of the kind of death which he suffered, changed into a fixed resolution the perverted feelings of Augusta Strohm.

Six weeks afterwards, she invited a fine young woman, a very particular friend, to take coffee, and availed herself of an accidental slumber to attack her with a hatchet. This not sufficing for her destruction, the consummation of the deed was perpetrated, after a faint struggle, by stabs on the breast with a knife. Strohm then cleansed and adjusted the room, placed the body on the bed, and lay down beside it, with the intention of passing the night. But when day light began to disappear she was seized with a tremor and oppression, and determined immediately to deliver herself up to the hands of justice, which she only meant to do the following morning. She then drest herself with care, took with her a prayer book, and also money and linen, which she knew would be necessary during her imprisonment, and forthwith presented herself to an officer of police, as the murderer of her friend, whose body she represented would be found in her apartment. We are left to infer the close of the catastrophe.

Report on some substances found in an Egyptian Mummy; by M.M. Boudet, Boutron-Charlard, and Bonastre.

These substances were a portion of muscular flesh; a crystalline mass formed upon it; and a compound powder used by the Egyptians in embalming.

The flesh belonged to the upper part of the thigh, and had a strong smell, and the colour of bistre. It was covered with bandages, and on examination the fleshy muscular layers appeared distinct, but with a white, pearly, crystalline deposit between the layers, and among the fibres. The crystalline matter was fusible in 59° Centigrade, = 139° Fahr.; was insoluble in cold distilled water, and very slightly soluble in boiling,—40 pints of boiling alcohol dissolved 10 parts of this substance, and the solution reddened turnsol. Weak *liquor potassæ* dissolved it readily, and on the addition of cold water, bimargarate of potass was thrown down. It was inferred to be of the nature of fat, and to be analogous to margarine humàine, or the margaric acid of *M. Chevreul.*

The powder consisted of a resin soluble in alcohol; of a gum-resin resembling myrrh; of vegetable fragments, very analogous to nutmeg; of chloride of sodium and lime; and of crystalline matter, such as is mentioned above.

A view is given of the method of embalming described by the ancients.

Report on an Antisyphilitic earth of Abyssinia; by MM. Cullerier and Soubeiran.

Nothing metallic was detected; but 100 parts contained 3.74 of soluble matter, which consisted of

Ulmate of soda,	.74
Carbonate of soda,	2.12
Sulphate of soda,	.86
Common salt,	.2
	3.74

Memoir on corporeal exercise, in its connection with the means of preventing or removing deformities, particularly of the spine, by *M. Pravaz.*

The author appears to have made a previous communication on this subject, to which he refers in many parts of this communication.

In deformities of the spine he considers extension, as likewise all those species of exercise which are in common use, as having a tendency to increase the disease. But the ascent of a mast by a floating line, the mounting a rope ladder, and particularly the action of swimming, he regards as placing the muscular movements connected with the spine in the most salutary position. He has therefore directed his principal attention to the construction of an apparatus by which the action of swimming can be readily imitated. This consists of an inclined plane, on which the patient, lying on his face, is to raise himself by means of the arms, and two lateral projections of which they take hold. The body is to descend by the action of gravity, moderated by a sufficient counterpoise.

In the fourth volume, the author gives some memoranda on the modes of restoring the regular shape of the thorax.

Report on a case of congenital exstrophy of the Bladder; with researches on some of the principal questions which attach to the existence of this deformity; by M. Velpeau.

The author and *M. Breschet* were deputed to report on the case of a child six days old, born at its full time, which had in the hypogastric region, just below the umbilicus, a red irreducible bleeding fungous tumour, about the size of an egg, which distilled a limpid fluid from two little papillae, having all the properties of urine. This tumour was constituted of the posterior part of the bladder; and M. Velpeau gives a detail of many cases of a similar kind which are to be found in authors, and of which he has not met with fewer than 100. These cases were long regarded as hernia of the bladder; but Tenon satisfactorily demonstrated the error of this opinion, and showed, that tumours of this kind consist of the posterior part of the bladder pushed forward by the abdominal viscera to supply the loss of substance which has taken place in the anterior part of that organ, and in the parietes of the abdominal cavity below the umbilicus. Defects of this kind are not to be regarded as monstrosities, but as the results of disease; the parietes of the abdomen, in the first instance, and the anterior surface of the bladder, in the next, being destroyed by ulceration; and the posterior surface of the bladder uniting by adhesion with the destroyed edges of the abdominal parietes, and thus presenting externally the spongy mucous surface of the bladder itself.

The memoir of the late Dr Duncan Junior on the same subject, published in the first volume of this Journal, is repeatedly quoted with approbation.

Memoirs on Aneurisms; by M. Gilbert Breschet.

In the present article, which occupies the whole of the second fasciculus, the author treats in successive sections, of the true, the mixed, and the varicose aneurism.

The *true aneurism* consists in a dilatation of the arterial parietes, without any apparent lesion or solution of continuity of the vascular coats. The largest as well as the smallest arteries are liable to this affection, as are likewise those which belong to osseous matter, as well as to the softest parts. The author divides true aneurism into the sacciform, the fusiform, the cylindrical, and the varicose. Gentle compression he considers as the most promising remedy in all those varieties; with the use of local and general astringents, and the subacetate of lead.

The *mixed aneurism* consists in a distension of the external coat of an artery, and the dilatation of the internal, which latter forms a sort of hernia by passing through an interruption in the middle coat of the vessel.

The varicose aneurism, or that by transfusion, originates in a wound made in an artery through the contiguous vein. The anterior opening of the vein healing, the posterior one continues unclosed; its parietes uniting by adhesion with the wounded coats of the artery. By this means the blood of the artery, at every systole, passes into the vein, and distends it, particularly above the wound. The blood of the vein, on the other hand, passes into the artery at the diastole, and hence arises a varicose dilatation of the artery below the wound; weakness of the pulse; and thinness of the coats of the vessel; together with a diminution of the temperature of the sensibility, and of the mobility of the parts situated between the wound and the capillary vessels which, by this means, fall into a sort of torpor resembling asphyxia. If these consequences should exhibit themselves, slight compression, which would otherwise suffice as a mode of treatment, is ineffectual; and it becomes necessary to have recourse to the application of a ligature both above and below the wounded part.

Medico-Philosophical considerations on the opinion of Aristotle, that the greater number of distinguished men are disposed to insanity; by J. H. Reveillé-Parise.

The author conceives that predisposition to insanity is connected with an organization more or less delicate, with unusual susceptibility of the nervous system, with great sensibility, a lively imagination, a moral faculty much developed, and an understanding much cultivated. Every man who is born with superior qualities wishes to distinguish himself from the bulk of manhood. He is anxious that his name should shine in the eyes of his contemporaries and of posterity; glory is never out of his thoughts; and he may be said to be employed all his life "in the fabrication of his statue." To have any chance of succeeding in his aspirations for fame he has labour to perform, obstacles to surmount, and of consequence he is liable to inquietudes and heart-burnings, and suffers agitations and emotions at one time painful, at another delicious, but always lively, multifarious, and vibrating. From these circumstances, the nervous system acquires an extreme mobility, and that sort of irritative weakness which renders the possessor very susceptible of all kinds of impressions, and exceedingly liable to disease. It has been thought that the learned are less subject to mental aberration than the poet or the artist; but the author adduces several examples to shew that this is an erroneous opinion.

Of the Convulsive affections of young children compared with apoplexy and tetanus; by Ant. Dugés.

The convulsions of which the author treats resemble those which sometimes occur in child-bed women. Their causes are various, and may be referable to pressure on the head; to dentition; to the exanthemata; to derangement in the digestive functions; or to worms in the alimentary canal or stomach. He considers the disease as arising from an idiopathic or sympathetic affection of the encephalon, and more particularly of the cortical substance of the convolutions of the cerebrum and cerebellum. Sometimes it assumes an intermittent type, with isolated and well-defined paroxysms of an epileptic character: sometimes it is preceded by an apoplectic state, which is either the cause of it, or to which it gives origin; and sometimes the apoplectic symptoms follow its attack. The disease may also present itself in a continued, or only a remittent and tetaniform character; and it often exhibits much irregularity in its phenomena. The practice necessary in its treatment much depends on the circumstances producing it. Whether it is symptomatic, or essential, it may be treated with antispasmodics; and the symptoms sometimes disappear by the operation of an emetic or purgative. If the disease arise from congestion or effusion in the head, evacuations of blood are called for; and if it assume a chronic form, and a continued type, some inflammation or effusion in the spinal column may be suspected, which may require the use of leeches or local irritants; and the same, should paralysis have been the result.

Observations relative to the use of the Holly (Ilex Aquifolium) in the treatment of Intermittent Fevers; by A. F. Chomel.

Though the cinchona is the medicine to be principally depended upon in the treatment of intermittent fevers, it is important to have a substitute when that medicine may happen to disagree, to be contraindicated, or to be inefficient. Of twenty-two cases which occurred during a few months in the Charité, seven had no paroxysms after admission, the change of circumstances having a sanatory operation; in four, the disease was evidently on the decline; in eight more there was a combination of the intermittent symptoms with some slight inflammatory affection, by which they might perhaps be produced; so that only three cases seemed to be fit objects of experiment, but in these the medicine seemed to be inefficient, and quinine was had recourse to for the removal of the disease. Had the holly, therefore, been given, without the circumspection exercised by the author, the deduction might have been a very erroneous one; namely, that it was successful in nineteen of the twenty-two cases, and failed only in three of them.

Experiments on the colour produced by the purple cow-wheat (the Melampyrum arvense,) and on the means of ascertaining its existence in flour; by M. Dizé.

M. Gaspard presented to the Royal and Central Society of Agriculture a paper on this subject, which was favourably reported on by M. Henry; and the present memoir may be regarded as a prosecution of the same subject. After giving a summary of those observations which relate principally to the chemical analysis of the Melampyrum, the author considers the mode in which its presence is most easily detected. The characteristic action of acetous acid on the colouring matter of the grain sufficiently discriminates its existence; and for this purpose, M. Dizé directs a soft paste to be made of flour, supposed to contain it, with a sufficient quantity of acetic acid, diluted with two-thirds of pure water. This is to be baked on a silver spoon, and on the evaporation of the water and acid, the little paste is found to have acquired a reddish violet-colour. Some additional remarks are annexed by M. Henry, from which, as well as the experiments of M. Dizé, it appears, that the colour, like that of indigo, is developed by fermentation, followed by great heat; and that it depends on a peculiar character, which the caseous material abounding in this plant possesses.

Of the organic changes remarked on the opening of an ox of five years old; by M. Dupuy.

This animal was affected with loss of power and sensation in its two hinder extremities; and its digestive functions, and the operations connected with them were much impaired. The principal disease was found in the lumbar region of the spinal column, where the medulla was much softened, and rendered darker in colour; the nerves proceeding from it being, at this place, much compressed and contracted, and the membranes thickened, with calcareous concretions of a yellow colour on the external surface.

Report by M. Dupuy on an Epizöotic disease, observed by M. Fodéré.

This complaint led to much destruction among cattle in the department of the Lower Rhine; and M. Foderé's attention was directed to its nature by the public authorities, in the years 1821 and 1822. It was distinguished by failure of strength; want of appetite, and power of rumination; frequent pulse; skin adhering to the bones, particularly at the chest; thirst; sensibility of skin; cough; difficult respiration; discharge of yellow and bloody matter from the nostrils; constipation or fœtid diarrhœa; convulsions, and death in eight or ten days. Abortion generally occurred in the course of the complaints in cows with calf. Much serosity was found in the chest; the pleuræ were adherent; the lungs were much disorganized, and did not throw out blood on cutting into them; the mucous membrane of the trachea was rather pale, and much covered with mucus.

General Report on the epidemics which have prevailed in France, from the year 1771 *to* 1830, *of which accounts have been transmitted to the Academy, by the Commission for Epidemics.*

The Royal Society of Medicine, for fifteen years after its establishment in 1776, was closely occupied under the Secretaryship of Vicq-d'Azyr, in inquiries into the existence and nature of epidemic disease in France. On the occurrence of the revolution, and the dissolution of this institution, the Society of the faculty of Medicine, during eighteen years of its existence, pursued the same researches, the results of many of which were published in its Bulletins. The Royal Academy of Medicine, at its formation in 1821, became possessed of the documents which had before been collected and the continuance of the inquiries, which took place under the sanction of the minister of the interior, put them in possession in the whole of the history of 900 epidemics, up to the year 1830, without taking into account those of small-pox, which are published annually in the reports on vaccination. These histories, which are about 1160 in number, include about 1370 communes, 179 arrondissemens, and 72 departments. A summary of them is given in several tables which are annexed to this article; and various pieces of important information are communicated, relative to the air and soil of France; and to the dwellings, food, employment, and moral affections of the inhabitants. The extent of sixty years, which this memoir embraces, makes it difficult to discriminate between the present state of the country, in many of those particulars, and the circumstances of improvement which have taken place during so long a period, and amid the occurrence of such an ample series of important events. Recommendations are made by the Academy to the minister of the interior, for the purpose of rendering more effective inquiries into the topography and diseases of France; and we have no doubt of the result being eminently advantageous. Considering the difficulties which exist in improving public medical arrangements, we are not surprised to hear of complaints being made of ignorant practitioners, and credulous patients; and that the latter are not confined to the lower orders of society, but are sometimes to be found among the wealthy and influential. A deserved compliment is paid to the unwearied attention and assiduity of many of the public medical functionaries; and a severe but just censure is pronounced on the parsimony of the Preféct, who " dans le comfortable de son cabinet," has sometimes reduced the honorarium of the physician below the wages of a Paris artisan.

Memoir on the question, whether it is proper, in unnatural presentations, to extract by the head; by M. P. Dubois.

The result of the author's researches on this subject is, that though delivery by the head is the natural and usual process, (and it has occurred in more than 95 cases in 100, at the Hospice de la Maternité,) yet it does not follow that an attempt to bring about a head presentation is always justifiable and proper. The efforts necessary to effect this object appear to the author very much to interfere with the circumstances which are favourable to ordinary natural labour, and therefore to destroy the argument which analogy might otherwise offer in its support.

Some further observations are made on the same subject at p. 475 of the 4th volume.

Report of M. Ollivier (D'Angers,) on the case of a tumour developed in the Testis of a child, containing hair and teeth; addressed to the Academy by M. le Docteur André.

M. André was disposed to consider the substance found in this tumour, as the debris of a fœtus, engrafted in the testicle; but M. Ollivier regards the case as merely one of those of which Meckel has traced the general history in a memoir on the hair and teeth, which develope themselves accidentally in the human body," contained in the 4th volume of the Journal Complementaire du Dictionnaire des Sciences Medicales.

New researches on the permanent retraction of the fingers; by Dr G. Goyrand: followed by a report made to the Academy on the subject of them, by L. J. Sanson.

The retraction here mentioned is considered by the author as not dependent on the flexor tendons, or on any expansions from the palmar aponeurosis, but as arising from the formation of cords, or bridles, made up of parallel fibres, fixed to the sheath of the flexor tendons; white, strong, inextensible, and having the aspect and character of ligaments. In the treatment of these affections, the author makes a longitudinal incision over the fibrous cords, which he detaches from the integuments, if adherent, and afterwards divides by a transverse incision, employing, a director should this be deemed necessary, to avoid injuring the tendons below. The fingers are then to be kept extended for six weeks or two months; and when the parts are healed, gentle flexion and extension are to be daily employed on all the joints of the fingers operated upon.

Medical History of a Disease which prevailed in the Prisons at Toulon, during the months of December 1829, *and of January and February* 1830; *by M. Fleury.*

The prisoners were about 4000 in number, one-half of whom were in prison ships, which are represented as having been very insalubrious; the remainder in houses on shore. The symptoms were very much those of typhous fever, united with considerable inflammatory affection of the chest, and in the progress of the disease obscure delirium generally presented itself. Some were carried off in the first days of the attack, under much appearance of determination to the brain or lungs, but generally the former. The disease, however, seldom terminated before the 7th or 11th, and in general not till the 14th or 17th day. The deaths were about 1 in 7. The encephalon was usually found to be much injected with serous effusion under the arachnoid coat, and in the ventricles. In a part of the lungs, there was usually a sero-sanguineous congestion, which was regarded as the commencement of gray hepatization. Appearances of congestion were pretty general over all the abdominal viscera. The mode of treatment at the commencement was antiphlogistic. Cool acidulated drinks were copiously employed, and leeches freely applied to the neck, temples, and behind the ears; cold washing was used to the head; "slices of lemon-peel bound round the forehead;" fomentations and sinapisms applied to the lower extremities; castor oil or calomel given when the bowels required it. If, in the progress of the disease, a gastritic or enteritic tendency discovered itself, enemas of camomile, cinchona, or rhatany with camphire, were employed. As the disease advanced, serpentaria with acetate of ammonia and camphire were exhibited; and wine when the failure of strength became considerable.

The fourth volume commences with an elogium on the Baron Portal. This distinguished pathologist was born at Gaillac in the department of Tarn, in the year 1742, and was descended from ancestors who had practised, time immemorial, the healing art. He went at 10 years of age to the College of Alby; and at 18, to the celebrated medical school of Montpellier, from whence, after taking his degree in medicine, he repaired to Paris at the age of 23. Recommendations which he took from the Archbishop of Alby (whom his father had cured of a slight complaint) obtained him the patronage of Senac and Lieutaud, which soon led to his introduction into the Academy of Sciences, and to the honourable occupation of assisting Lieutaud in the publication of his Historia Anatomico-Medica. In 1770, he was appointed to succeed Ferrein in the School of Medicine in the College of France; and in 1776, was nominated by Buffon as associate with Petit in the chair of anatomy at the Jardin du Roi, though Vicq d'Azyr had acted as his substitute and had his good wishes. Before the revolution he was physician to Monsieur; and on the restoration of the Bourbons, was made physician to Louis XVIII. and at his death to Charles X. He was nominated Perpetual President of the Royal Academy of Medicine at its formation; and was a member of the general council for the management of hospitals. He was created a baron by Charles X., having been previously a Chevalier and a Commander of the Legion of Honour. He died in 1832, at the age of 90, having suffered much by stone; and a large calculus and four smaller ones were found in his bladder. Portal's works were numerous and valuable; and he preserved activity of mind during the whole of his long life. He was distinguished for amiable temper and agreeable manners; and his soirées, which he held regularly once a week, were the resort of the most eminent men of all ranks and professions. To his influence with Louis XVIII. was in a principal degree owing the establishment of the Royal Academy of Medicine.

Of the Plastic malignant or Gangrenous Angina, which appeared in an epidemic form at St Denis, and more particularly in the Royal establishment of the Legion of Honour, in the years 1827 *and* 1828; *by M. Bourgeois.*

At this establishment, which occupies the ample site of the old abbey, there are 700 females of all ages, supported and educated at the expense of government.

The disease was characterized by swelling in the parotids and in the posterior fauces, which were covered sometimes with much white mucus, at others with grayish white pellicles; by cough and dyspnœa; slight sore throat and some difficulty in swallowing. There was little fever at the commencement, but the strength soon became reduced, and the patients were sometimes suffocated early in the disease. Sometimes the complaint went on for twelve or fourteen days, and then terminated fatally. In most cases there was an expectoration of a tubular membrane, such as occurs in croup, which relieved the symptoms to a certain extent, though the disease went on for many days subsequently, and the patients were hardly recovered in less than a month. There were fifty-seven cases, of which five terminated fatally.

In the bodies of those which were examined, a false membrane was found lining the interior of the larynx and trachea, and extending down to the bronchia, and sometimes a short distance into the œsophagus. Leeches and blistering were freely employed; but most advantage was derived from the repeated application of strong muriatic acid with a camel hair-pencil to the affected parts of the posterior fauces. When the impatience of the patient made the use of this remedy difficult, a *speculum oris* became necessary, and some mechanical means of procuring quiescence.

Memoir on Ligature of the Tongue, and of the Lingual Artery, preceded by a case of cancer of the Tongue, cured by means of a ligature placed on that organ; by G. Mirault, M.D.

In a case of cancer of the middle-third of the tongue, in a young woman of 23, when the author wished to tie the lingual arteries preparatory to the removal of the affected part, he was disappointed in his expectation of being able to reach the artery on the left side, but he succeeded in the right with great relief to the symptoms; and in about three weeks, performed the operation of placing a ligature, by means of a large curved needle, round the affected part of the left side of the tongue, through an opening made about a finger's breadth under the chin, in the median line of the neck through the skin, the adipose substance, the raphe of the mylo-hyoideus, and the cellular interstice of the genio-hyoideus; the tongue being held firmly out of the mouth by an assistant. In about nine days, the strangulated part separated, and as soon as this had taken place, the author placed a ligature through the same opening, round the affected part of the right side of the tongue. Twenty-seven days after the second operation the ulcer was nearly cicatrized, and only a small indurated portion remained of the size of a filbert. The patient was under treatment for two months, by which time her health had suffered considerably. Country air and proper nutriment restored her to perfect health in about six weeks, when she came to Angers, and was exhibited before the Society of Medicine. The wounds were then cicatrized; there was little loss of substance; she could speak so as to be understood, and her taste was nearly as perfect as it ever had been. The author makes many important observations relative to the practice which he has here employed, and the mode of applying a ligature on the lingual arteries.

Report by M. Girard, on the account of a dropsical disease in men and sheep, by MM. Hamont and Fischer.

It appears that in Lower Egypt, the whole of the labouring population are badly fed and clothed; have wretched habitations; often work in swampy and insalubrious places; and are exposed to much vicissitude of season. Hence their bodily formation is weak; their children scrofulous and rickety; and old age very speedily comes upon them. The oppression and tyranny to which they have been long subject by the exactions of government, (but which one would hope is now diminishing under the sway of the present chief,) leave nothing of the more nutrient product of the soil to the persons who raise it. The soldiers themselves are little better circumstanced, and the effect of these depressing causes is to give rise to dropsical affections, often conjoined with dysentery, which, according to Messrs Hamont and Fischer, who were medical men of eminence connected with the Medical School of Abouzabel, occasion a fifth of the whole mortality.

Sheep seem to be affected extensively with the same kind of disease, and not fewer than 16000 annually die of it. It generally appears soon after the inundation of the Nile begins to retire; and is supposed to arise from the animals feeding with avidity on a plant called *Bisse*, which covers the fields soon after the retreat of the waters, and from which the natives have given to the disease the appellation of *Bissa*.

Remarks on the Structure of the Larynx and Trachea; by E. A. Lauth.—Memoir on the obliteration of the Bronchia; by A. C. Reynaud, M. D.

The object of the first of these communications is to examine some controverted points relative to the anatomy of the larynx and trachea, particularly as relating to the formation of the voice; the intention of the second is to give a view of the nature of obliteration of the bronchia, and of the circumstances under which they occur. Both papers are illustrated by appropriate engravings. The small *cul de sacs* in which the bronchia terminate may sometimes, according to M. Reynaud, be obliterated by an agency resembling that of inflammatory action, without either internal deposition or external pressure. This is the most frequent cause of coarctation which has come under his notice. The deposition of tubercular matter into the cavity of the bronchial cells is a second cause of obstruction, and a third arises from external pressure either produced by the pressure of calcareous deposits, or of tubercular formations.

Remarks on Rachitis, including observations on the changes observed in persons who have died of this affection, and on the treatment of deformities of the osseous system; by M. Salmade.

The author considers the disease as bearing a strong analogy to scrofula; and recommends tonic medicines, well regulated exercise, and a nutritious diet of animal and vegetable food in its treatment; but he entirely forbids (though without any apparent good reason) the employment of milk, or of any portion of farinaceous aliment.

History of a Case of imperforated anus and urethra; by J. N. Roux, M. D.

In a child of two days old, the urine was removed by perforating with a stilette the membrane which obstructed the passage. An opening was then made in the middle of the perinæum, and the *sphincter ani* exposed, which was seen to contract when the child cried. The incision was carried on towards the *os coccygis*, through the *levator ani*; and the operation finished by a straight bistoury, which was projected into the cavity of the rectum, in such a manner as to avoid the bladder; and the incision enlarged in withdrawing the instrument. The meconium was evacuated; the intestine kept clear by injections; the artificial anus kept enlarged by bougies, and a complete cure effected in a moderate time.

History of the reduction, after a lapse of forty-five days, of a luxation of the humerus downwards and outwards, into the infra-spinous fossa; by M. Lepelletier (de la Sarthe.)

During the extension necessary for effecting the reduction, a noise was heard, which seemed to the author to arise from the giving way of the adhesions between the head of the humerus and the infra-spinous fossa. The reduction was readily effected by raising the head of the humerus, and depressing the cubital extremity. A cure was accomplished.

Operations of Lithotrity practised with a brise-pierre, by means of pressure and percussion; by M. le Docteur Segalas.

Ten cases are narrated, all of which did well.

Report made to the Academy on the proposition to place the bust of Corvisart in its meeting-room; by M. Bourdois de la Motte.

To avoid obeying too hastily the impulse of feeling, it is enacted by a law of the Academy, that no statue or bust of a member shall be placed in the society's hall till after a lapse of five years from his decease; thus allowing sufficient time for a dispassionate appreciation of his merits. It is unnecessary to say that the proposition was affirmed unanimously; but in a general resumé of Corvisart's character, an anecdote is given of him, which may not be uninteresting to our readers. At the moment of the birth of the King of Rome, Corvisart addressed the following words to the Emperor Napoleon. "Sire, this infant should be the full completion of all your wishes; consider the position from which you set out. In less than ten years, a simple officer of artillery, Captain, General of Brigade, General in Chief, First Consul, Emperor, husband to the Archduchess of Austria, father of a male child, you have have attained the highest point to which the wheel of fortune can raise the most illustrious: Stop, Sire! fortune may be wearied; descent only remains." "Voilà bien, lui repond l'Empereur, un vrai discours de Champenois." "But gentlemen," adds M. de la Motte, "what prophecy was ever more rigidly accomplished, and what man would have dared, amid the general intoxication, to give so striking a proof of judgment, foresight, and courage?"

Some remarks on Lithotrity; by Dr Civiale.

The great attention which has been paid to everything relative to calculous diseases in the country has made the subject of lithotrity to be viewed with very high interest ever since it was first brought forward by the distinguished author of the communication before us; and yet it is singular, that its precise practical importance, and the circumstances under which it may be best employed, have not yet been sufficiently ascertained, nor perhaps quite enough attended to, by the most distinguished operating surgeons of Great Britain.

M. Civiale complains that the success of his operation, and the circumstances following it, have often been much misrepresented, even when there was no difficulty in ascertaining the precise facts. Between the years 1824 and 1833, he operated upon 244 patients by lithotrity, of whom 236 were completely cured; 3 incompletely; and 5 died. He promises the particulars of every case, as a proof of their precision and authenticity of his statement. There was an average of about four and a fraction operations in each case. At the commencement of his practice, the operations lasted about half an hour; but he soon diminished the duration to from five to eight minutes; preferring a greater number of short sittings to a smaller number of long ones. When the calculus is large, a previous fracture of it by percussion he considers as expedient; but he attributes many of the defects which have been attributed to his operation in other hands, to ill made instruments, or an unskilful use of them.

He gives a tabular view of the success of lithotrity at the Hospital Necker, (an establishment devoted to the treatment of calculous diseases,) in the years 1830, 1831, 1832, and contrasts it with the erroneous representation made on the same subject. From this account it appears, that the patients admitted were 93, of whom 51 only had stone. Of those 51, in 27 lithotrity was performed, and all did well; 8 had the operation of lithotomy performed, and 5 died; while 16 were operated upon in no way, 6 of them quitting the hospital, and 10 dying in it. In the statement circulated to the disadvantage of lithotrity, he informs us, that the 10 deaths mentioned as having taken place in cases where no operation had been performed, were attributed to lithotrity, when there had been not a single unfavourable result; and 1 death in 3, mentioned as occurring in the persons operated upon, whereas it was only 1 in 7, even when the lithotritized cases were blended with the lithotomized. The author expresses his regret, that persons should not have taken the trouble to ascertain the precise state of the facts at the proper quarter; a thing which he states to be the more easy, as those facts are recent, have been observed in a very short space of time, and have occurred in an hospital which offers every facility for discovering the truth.

Notice concerning the poisoning of seven horses by the Arseniate of Potash; by M. Bouley the younger.

By an unfortunate accident, those horses took, with their corn, some arseniate of potash, which escaped from a packet containing it. Four of them died in from thirteen to seventeen hours; the remaining three, to which was given the precipitate, which was formed by volatile alkali, from a solution of sulphate of iron long previously exposed to the air, lived respectively thirty-two hours, fifty-four hours, and nine days. The symptoms were violent colic and diarrhœa; and appearances of inflammation were discovered after death in the stomach, intestines, and bladder. Numerous ecchymoses were seen in the basis of the left ventricle of the heart, but no traces of poison were discoverable in the contents of the stomach or bowels.

As the antidote employed seemed to have some effect in prolonging life, the author offers, in a subsequent paper, some observations *on the efficacy of the hydrate of the per-oxide of iron as an antidote to arsenic.*

The experiments were 17 in number, and the following is the result of them. The author found both the hydrate of the peroxide of iron, and the sulphate of iron, in noway serviceable against the arseniate of potash. A horse requires not less than two ounces of the white oxide of arsenic to destroy him, and death happened in the three instances mentioned, in forty-five, forty-eight, and fifty-two horses after its administration.

Hydrate of per-oxyde of iron acted as a complete antidote to white oxyde of arsenic, in four cases, when given in doses of thirty-two times the quantity exhibited.

The same effect happened when the antidote was administered two and four hours after the poison; but when it was delayed to twenty-five hours, and some of the first appearances of poisonous operation began to exhibit themselves, the prophylactic agency was entirely lost, and death speedily took place. In one of those cases, in which the horse was destroyed sixty-two hours after the poison, and its antidote was given, no trace of arsenic or its neutralized combination was to be discovered by the most careful analysis.

Memoir on Tubercles, in answer to a question proposed by the Royal Academy of Medicine on the 28th of August 1827. *By F. P. Ravin, M. D.*

In this essay, the author examines, in considerable detail, the nature of the various descriptions of tubercles, with their diagnosis, prognosis, and treatment. He considers them of two species: the one as formed in serous, cellular, and other analogous tissues, which is the more unusual description; the other, of glandular tissues, which is the more common; but they do not often both occur in the same subject. Tubercles of the second species, when they occur in glandular follicles, constitute the greater number of the cases of *phthisis pulmonalis.* Inflammation of the mucous membrane of the chest or abdomen may be communicated to the glandular follicles which are contained in or adherent to them, and thus bring them to a tubercular state; and, on the other hand, a tubercular state of these follicles constantly brings on inflammation of the mucous membrane with which they are contiguous. Phthisis does not consist either in bronchitis or chronic pneumonia, but depends most frequently on an affection of the mucous glands, to which succeeds ordinarily disease of the bronchia and pulmonary tissue. Owing to this mixed character, the author would give the appellation of *Adeno-bronchitis* to the ordinary *phthisis pulmonalis*, and *Adeno-laryngitis* to that in which the larynx is most affected.

Fracture of the Vertebral Column. By E. H. Lauth.

A man who, in July 1830, fell from a second floor window, and recovered, with deformity of the cervical column, but without paralysis, died in December 1833 of pericarditis grafted on an aneurism of the heart. Extensive ankylosis in the cervical column, and irregular destruction of the intervertebral substance, were the principal phenomena observed on inspecting the body; and it appears to the author, that the immediate effects of the accident were to press on, and in some degree to crush, the bodies of some of the vertebræ, without compressing the spinal marrow. The disorganized parts of the bones being absorbed, the detached parts became soldered to the contiguous portions, and cicatrization thus effected without accident.

Case of complete obturation of the pupil of the left eye after the operation of Cataract. By M. Silvy.

The extraction of a well-formed cataract of the left eye was performed by an empiric, who, for his own credit, cruelly exposed the eye to a strong light immediately after the operation. In consequence of this, the membrane of the crystalline lens soon became opaque, and so adherent to the edges of the pupil, as to prevent the passage of a single ray of light. By the introduction of a couching needle half a line from the insertion of the iris on the outside, the posterior chamber was entered, the crystalloid disengaged by a careful movement of the needle from above downwards, and its debris pressed to the bottom of this chamber, so as to disengage the pupil entirely. By prudent precautions, the sight was perfectly restored in nine days. This operation was performed three months after the extraction, the sight of the right eye having been previously lost, from a complete opacity of the transparent cornea.

Case of a complete luxation of the Tibia backwards, by M. Blanchard; with the extract of a Report relative to it, by Messieurs Breschet, Sanson, and Gimelle.

The accident is exceedingly rare, three cases only of the description, according to the statement of the reporters, being on record, and those imperfectly described. The reduction was readily performed; but the reporters consider it impossible for such an accident to take place "without a rupture of the cross ligaments, or some other serious injury at the knee-joint."

Case of severe luxation of the Knee, with reflections on the nature of this accident, and on the mechanism of the causes which produce it; by the Baron Larrey.

In all cases of this kind, the author is of opinion that an ankylosis of the joint is the only favourable issue; and that where there is extensive laceration of the ligaments complicated with an external wound, and protrusion of the head of a bone, as in the present instance, immediate amputation should be had recourse to. The patient was in this case averse to the removal of the limb at the time that it was first thought desirable; and though he at length submitted to it, it was not till the twenty-first day after the accident. For some days the patient went on well; but symptoms of pneumonia, with which he had been previously affected, came on about fourteen days after the operation, which, becoming combined with cerebral inflammation, soon carried him off.

Case of loss of Memory; by M. Koempfen.

A cavalry officer had a fall from his horse in the riding-school, and was pitched on the right parietal bone. He had vomiting and slight syncope, and a total want of recollection of every thing which occurred the day previous to the accident, and for some hours after it. In a few days he was sufficiently recovered to return to his duty; but his recollection of what happened during the two periods just mentioned had not returned when the communication was made.

In the 4th volume of the Academy's Memoirs are inserted an ample set of interesting and judicious instructions, drawn up by the Academy for the use of M. Gaymard, the surgeon of an expedition sent into the North Seas in search of the Corvette la Lilloise.

ART. III.—*Traité Pratique de la Phthisie Laryngée, &c. A Practical Treatise on Phthisis Laryngea, Chronic Laryngitis, and Diseases of the Voice.* By A. TROUSSEAU, Associate Professor to the Faculty of Medicine of Paris, &c., and H. BELLOC, D. M. P. Accompanied with nine Plates. 8vo. Paris, 1837. Pp. viii. and 488.

MM. TROUSSEAU and BELLOC had been for some time engaged in investigating the diseases of the larynx, when the following questions were promulgated by the Royal Academy of Medicine of Paris: *What ought to be understood by Phthisis Laryngea? What are its organic alterations, causes, species, terminations, and treatment?* These were answered in a memoir which received the approbation of the Academy, and which now appears in the more extended form of the treatise before us. In presenting our readers with an abstract of the work, we shall follow the arrangements suggested by the Academy, and adopted by the authors.

I. DEFINITION.—The proper signification of the word *phthisis* is consumption. Every organic alteration, therefore, which may give rise to hectic fever and marasmus is, properly speaking, a *phthisis.* By several modern writers the term has been restricted to a tubercular affection of the lungs, and hence to many it suggests the idea of tubercles, whatever qualifying adjunct be appended to it. This view of the subject is justified neither by the strict meaning of the term, nor by the pathology of any of the affections to which it is applied. The strict definition of laryngeal phthisis, then, ought to be, a chronic affection of the larynx, which may by itself give rise to consumption.

It is, however, rare in laryngeal phthisis, that death is occasioned by consumption. The patients more frequently perish from suffocation before they are attacked by *marasmus.* Notwithstanding this they are still the victims of laryngeal *phthisis,* because, without a morbid alteration of the larynx, suffocation would not have taken place, and had this morbid alteration not produced *asphyxia,* the patient would have passed through all the degrees of marasmus. From these considerations, the authors are induced to adopt the following definition.

By phthisis laryngea is to be understood every chronic alteration of the larynx which may induce consumption or death in any manner.

MM. Trousseau and Belloc enter somewhat into the literature of the subject, and like most French writers, carefully shun any allusion to those British writers who have directly or indirectly treated of the affection.

II. ORGANIC ALTERATIONS.—In this chapter the authors do not confine themselves to the alterations met with in the larynx, but extend their observations to those of the *velum palati, pharynx, trachea,* and lungs, as far as these can throw light on some disputed points connected with laryngeal *phthisis.* They divide the alterations of the larynx into two great classes, 1*st,* Those affecting the mucous membrane, and 2*d,* Those affecting the cartilages, to which they add an account of foreign bodies found in the larynx.

A. *Alterations of the mucous membrane.*—These are redness, swelling, erosion, and ulceration.

1*st. Redness and swelling.*—Redness of the tissues after death is generally regarded as the most constant trace of previous inflammation. The absence of this sign, however, does not prove that inflammation had not previously taken place, since it frequently happens that not the slightest blush is observable after death, at those points which, during life, were the seat of intense inflammation. The same may be said of swelling. What happens in acute inflammation occurs also in chronic. The blood is rarely combined in an intimate manner with the tissues; it still circulates in its proper vessels, and when life is extinct, parts which had been affected with chronic inflammation grow pale like others, as may be seen in chronic ophthalmia, and severe cutaneous diseases. In diseases of the larynx, if we depress the tongue of the patient, and examine the *velum palati*, tonsils, and pharynx, and if, as sometimes occurs, we can obtain a view of the epiglottis, we may satisfy ourselves of the existence of a vivid redness of the parts, although after death they may appear of a bloodless paleness.

These remarks are by no means unnecessary, since medical men of the highest reputation, as Cayol, Bayle, Laënnec, Dupuytren, &c. finding the aryteno-epiglottidean ligaments, and the vocal cords pale and swollen, have concluded that œdema was the cause of the death, and not inflammation, either acute or chronic. In other cases, when a child suddenly affected with acute laryngitis has, in a few hours, perished in anguish, the medical attendant observing during life spasmodic symptoms, and frequently remissions, and after death finding in the larynx neither false membrane, nor anomalous redness, nor swelling sufficient to produce suffocation, has concluded that the disease was spasmodic croup—an affection, the existence of which MM. Trousseau and Belloc are inclined to deny. When also in a case of laryngeal *phthisis*, death has been produced by suffocation, and the redness and swelling were insufficient to account for this fatal termination, recourse has been had to asthma and other nervous affections, at the same time that the want of connection between the symptoms and the morbid appearances was owing solely to the new circumstances in which the body was placed after death. These, however, are not the only errors to which this oversight has given origin. Œdema of the mucous membrane of the larynx, which, though not an imaginary disease, is extremely rare, has assumed an important place in nosology. Whenever the vocal chords and the aryteno-epiglottidean ligaments were found swollen and discoloured, the affection was pronounced to be *œdema glottidis*. MM. Trousseau and Belloc do not deny that such an affection exists, believing, as they do, that they have seen one true instance. But they wish to impress upon their readers, that tumefaction, even without reddening of the mucous membrane of the larynx, is in almost all cases a sign of inflammation. This subject is more fully discussed in another part of the work, to which we shall have occasion to allude in the course of this paper. Such being the case, however, it is evident, that when redness and swelling are found after death, the proof of previous inflammation is the greater.

Occasionally, though the authors have met with only one case, the superior part of the pharynx appears of a livid red colour, and swollen to such a degree as to resemble the neck of the *uterus.* The dotted redness which is very frequently found in inflammation of the mucous membrane of the *trachea* is scarcely ever seen in the epiglottis or in the larynx. This is owing to the less degree of vascularity of the latter, the mucous membrane of which is naturally dense and pale,—a circumstance which is probably one of the principal causes of that almost complete decoloration which has been sometimes observed in *larynges* which had most evidently been inflamed.

2. *Erosions.*—The mucous chorion alone is involved in erosions. The membrane appears as if it were worn, the flattened edges of the erosion are insensibly confounded with the sound portion, so that frequently it is impossible to fix upon the line of demarcation. The lowest portion of the erosion seems to be only a little deeper than the margins, which are neither rugose nor projecting. By placing the affected portion under water, which is the only way in which the appearances can be properly seen, the erosions will be observed to have that villous appearance which is often met with in the stomach of the dog species, and which is never seen in the air passages, except when the epithelion has been destroyed. At first sight it might be supposed, that these erosions constituted the first degree of ulceration, that the number of the ulcerations would be greater in proportion as the erosions are more numerous, and that the former would never be found without the latter. This, however, according to the authors, does not occur. On the contrary, numerous erosions to a considerable extent exist without any trace of ulceration, and deep ulcerations are met with, while not the slightest appearance of erosion is met with around them. In one of the cases reported in the volume, the mucous membrane covering the thyroid cartilage was covered with ulcers, while that covering the cricoid presented no signs of erosion. In another instance, the membrane lining the larynx and trachea was eroded to an immense extent, without any ulceration.

MM. Trousseau and Belloc farther state that they have never met with erosions of the mucous membrane lining the *larynx* and *trachea,* except in cases where the lungs were affected,—a fact which at first sight might seem to justify the opinion of M. Louis, that such erosions are always owing to the contact of pus passing over the lining membrane of the bronchi and trachea. However plausible this view at first sight may appear, it will be found to be completely controverted by numerous facts. In individuals labouring under tubercular affections, numerous severe ulcerations of the *ileum* are met with, which evidently arise from another cause, and if tubercles attack the crypts of the *ileum*, without the lining membrane being exposed to pus, which might induce inflammation and ulceration, why may not this be the case in the *larynx* and *trachea*, which, from their connections with the lung, are more liable to tubercles?

A remarkable difference, however, is observed between the form of tubercular ulcers of the intestines, and that of the erosions and ulcerations found in the *trachea* and *larynx* in phthisical patients. In the former, small, hard, and semicartilaginous bodies are met with, which, according to MM. Trousseau and Belloc, have, without sufficient proof, been looked upon as tubercles, while in the latter the margins of the ulcers exhibit no appearances of this formation.

3. *Ulcers.*—The appearance of an ulcer it is unnecessary to describe. They may affect the whole larynx, vocal chords, aryteno-epiglottidean ligaments, the mucous membrane covering the *epiglottis*, and even the cartilages. In general, ulceration begins in the mucous membrane. In some cases, submucous abscesses are found, in which ulcers commence like certain fistulous openings in the skin. Occasionally the ulcer may communicate with a necrosed cartilaginous surface instead of an abscess.

B. Alterations of the cartilages of the Larynx.—Under this head, the authors give an account of the various alterations of the thyroid, cricoid, and arytenoid cartilages, as well as of the epiglottis, which, though a fibro-cartilaginous structure, and rather belonging to the tongue than the larynx, participates so much in the affections of the latter, that it is neither possible nor desirable to separate them.

1. *Ossification.*—The cartilages proper to the larynx, like those of the ribs, are naturally ossified after a certain age. But in laryngeal phthisis which has lasted two years, the same takes place even when the youth of the patient is such as to prevent any similar alteration from ocurring, except from disease. In illustration of the manner in which ossification takes place in the cartilages of the larynx, MM. Trousseau and Belloc adduce what happens in the union of fracture, and in the cartilages of the ribs on the affected side in cancer of the breast.

The osseous matter in morbid ossification of the cartilages of the larynx appears in irregular patches on the surface, and not as it is deposited in the bones of the fœtus. In certain points, the cartilage throughout its whole thickness is converted into an osseous substance, and at the boundaries of ossification it is accurately inclosed in bone, which then overlaps it in the form of a thin plate. When the thyroid and cricoid cartilages are ossified throughout their whole thickness, two osseous plates stretch from without inwards, so as to embrace the remaining cartilaginous matter which occupies the intermediate space, and if the whole be subjected to boiling, the cartilage will be detached from the bone exactly like an epiphysis. The same cartilage generally exhibits several points of ossification. Sometimes, though chiefly among old men, the cartilages are completely ossified. The cricoid cartilage is most easily ossified, and that at its posterior part, next to that the thyroid. MM. Trousseau and Belloc have never seen the arytenoid cartilages ossified; and it must be rarely that this alteration takes place. Frank has quoted from Paw an instance of ossification of the *epiglottis*. The *perichondrium* itself is sometimes ossified.

It is of importance to state that ossification takes place in *phthisis laryngea* at a time when there is neither ulceration nor erosion, and when there is merely *chronic laryngitis*. Farther, the ossified part does not communicate with any fistulous passage, or with the bottom of any ulcer, it being always separated from the ulcerated surfaces, or the submucous *parietes* of abscesses, by cellular tissue, more or less hypertrophied.

2. *Necrosis of the cartilages.*—This occurs, according to the authors, more frequently in laryngeal phthisis than has been suspected, they having met with it in more than one-half of the bodies examined. The following are the forms and conditions under which it appears.

The necrosed portion is always completely denuded. This is a character which is never wanting, because when any portion of the frame dies, it never fails to separate from the rest. This separation, however, takes place in a peculiar manner in the instance of the cartilages now under consideration. The necrosed part is quite bare on its external surface, being never covered with cellular tissue, but lying in contact with pus, or forming the bottom of a fistulous passage communicating with the larynx. When touched with the point of a scalpel, a *sequestrum* is found similar to that met with in bone. Though the separation between the *sequestrum* and the cellular tissue or perichondrium takes place rapidly, a long time elapses before the separation is accomplished between it and the rest of the cartilage. When this takes place it may be rejected, as has happened in several instances on record, or it may remain wedged in, and produce fatal consequences.

In *phthisis laryngea* of any considerable standing, the necrosed portion is always ossified. In severe fevers, *necrosis* of the cartilages of the larynx occurs without ossification. The hypothesis regarding this adopted by MM. Trousseau and Belloc is as follows.—The ulceration, which is most frequently, if not always, the cause of the necrosis, produces inflammation of the *perichondrium*, and consequently an osseous deposit in the subjacent cartilage. When the ulceration reaches the ossified cartilage it is the more easily affected with necrosis, that ossification has already deprived it of a great portion of its vitality. This explanation is rendered the more probable by the fact, that when ulcerous laryngeal phthisis proceeds with great rapidity, and occurs in very young subjects, *caries*, instead of *necrosis*, is the result. The arytenoid cartilages, too, which are never ossified, are, like the epiglottis, affected with *caries*, and not with *necrosis*, except in severe fevers, when the latter morbid condition is owing to a particular state of the economy. Hence the authors conclude, that in laryngeal *phthisis* ossification must precede *necrosis*.

It may be objected, that in submucous abscess of the larynx, the cartilages are almost always found to be ossified and necrosed. It cannot, however, be supposed, that the cartilages were first denuded, then necrosed, and last of all ossified. In acute submucous abscess neither necrosis nor ossification are met with. It is only in chronic cases that these have been found, and the explanation of the phenomenon is easy. Such abscesses are the consequence of *necrosis*. The sequestrum, as in other parts, by the irritation which it produces, gives rise to the formation of matter, which, if it do not escape by a fistulous opening, will form an abscess. Moreover, we cannot suppose that *necrosis* can precede ossification, since it is impossible that any deposit can take place in a part which is dead, and between which and the neighbouring parts all vascular communication is cut off.

The authors, it will be observed, do not deny that *necrosis* of the cartilages of the larynx may take place in acute affections and in severe cases, without previous ossification. They only assert, and the cases which they cite bear them out in their assertion, that in laryngeal phthisis ossification always precedes necrosis.

3. *Caries of the cartilages.*—This morbid alteration in the larynx is less frequent than *necrosis*. The authors have frequently observed it in the cartilaginous rings of the *trachea*, once in the thyroid, once in the epiglottis, three times in the arytenoid, but never in the cricoid cartilage. Their attention, however, had been directed to the subject only for two years, and consequently, many cases may have occurred in their practice without their being aware of them, and this may account for their experience being so contrary to that of Frank, which he gives in the following words:—"*Sæpissime cartilaginem cricoideam carie erosam deteximus; semel tanta hujus cartilaginis erosio erat, ut margines illius, ex utrâque parte dehiscentes, in pharyngem erosam prominerent.*"

In caries, ulceration commences in the mucous membrane, and rapidly extends to the submucous cellular tissue, so as at the end of a few months, or it may be weeks, to reach the perichondrium and cartilages. The extreme rapidity of their progress may be explained by the fact, that the authors never met with caries of the cartilages of the larynx except in patients affected with tubercular pulmonary phthisis, in which there appears a deadly tendency to ulceration and suppuration.

When the parts affected with caries are carefully examined before dissecting them, the bottom of the ulcer which rests on the cartilage is vascular, and endued with considerable vitality, and that vascular villous appearance is observed which has been alluded to in speaking of erosions of the mucous membrane. The cartilage when carefully dissected is found to be eroded, and as it were gnawed. The *epiglottis* and arytenoid cartilages may be completely destroyed. The thyroid cartilage itself may be perforated, and M. Andral has cited a case in which ulceration had proceeded to such a length as to destroy all the parts to the skin, and establish a fistulous communication between the outside of the neck and the larynx, through the angle formed by the meeting of the two plates of the thyroid cartilage.

All the cases of caries observed by MM. Trousseau and Belloc occurred, as has been mentioned, in individuals affected with tubercular pulmonary phthisis. This coincidence not being observed in necrosis, constitutes a marked distinction between them.

4. *Lesions accompanying caries, necrosis, and ulceration.*—In the same larynx, *caries, necrosis*, and ulceration may coexist, of which some cases are narrated by the authors. But it is impossible that deep ulceration and caries or *necrosis* of the cartilages can take place without the mucous membrane, and submucous cellular tissue being affected with considerable inflammatory swelling, which has been inaptly, in the opinion of the authors, named by Bayle *œdema glottidis*, which produces death by suffocation. The authors have dissected nine individuals affected with this. Two of the cases were acute, the one produced by violent inflammatory catarrh, the other supervening on tracheotomy. Seven were chronic, of which five coexisted with *necrosis, caries*, and ulcers of the *larynx*, and two with ulcerous tumours of this organ.

C. *Foreign bodies found in the Larynx.*—These may either be formed in the organ itself, or introduced into it. Those found in the organ consist of *polypi*, vegetations, cancerous tumours, tubercular tumours, hydatids, and *calculi*, of which the authors give examples from their own practice and the works of other writers. Among these foreign bodies, they enumerate also false membranes, of which, however, they have met with no instance. The cases mentioned by authors are evidently those of croup.

In concluding this first division of the work, the authors endeavour to show that the distinction between laryngeal and tracheal *phthisis* is useless. Their arguments are as follows: 1*st*, According to those authors who are most anxious to separate them, both are produced under the same circumstances, and under the influence of the same causes; 2*d*, When symptomatic, they are occasioned by the same diseases, and so far is this carried, that affections which are most frequently the cause of the *one* are also most frequently the cause of the other. Thus pulmonary tubercles engender more frequently ulceration of the larynx than *syphilis* does, and ulceration of the trachea is more common in patients affected with tubercles, than in those affected with small-pox; 3*d*, They frequently coexist in the same patient. In support of these statements, the authors adduce cases reported by Lieutaud, Morgagni, and Louis, and the authority of Double, Borsieri, and Frank. They do not deny that it is advantageous to ascertain the exact seat of the malady, but they object to classifying as two diseases, what, in their opinion, is only one.

III. Causes.—From what has already been stated, it appears that MM. Trousseau and Belloc do not consider *phthisis laryngca* to be a special disease, always exhibiting the same pathological appearances. In some circumstances it may exist by itself, no affection of the rest of the body being observed, which is capable of explaining its developement. More frequently, however, it is the result of various organic lesions, which, when once produced, become true causes of laryngeal *phthisis.* These affections, from attacking the larynx, and from the functional symptoms which they produce, receive the title of laryngeal phthisis.

The authors have seen, and give instances in which the disease has been produced by *angina laryngea*, which had become chronic, tracheotomy, loud cries, habitual efforts of the voice, excessive venereal indulgence, periodical exanthemata, various tumours in, or pressing upon, the larynx, syphilis, but chiefly by tubercular pulmonary phthisis. The tubercular and scrofulous diatheses predispose to it. Besides these, age and sex exert a great influence over the developement of the disease. Almost all the patients whose cases were observed by the authors, or have been reported by writers, were between twenty and fifty years of age. The most of them were between thirty and forty-five. From the observations of M. Serres and M. Louis, it appears that among individuals of the tubercular *diathesis* at least; the alterations in the larynx and trachea are twice as frequent among men as among women. These observations coincide in a remarkable manner. Women are less subject to alterations of the organs of voice than men, and children, whose constitution is very analogous to that of women, participate in this immunity.

IV. Species.—The authors divide laryngeal phthisis into five species, simple, syphilitic, cancerous, tubercular, and impetiginous, (dartreuse.) The first is produced by the common causes of inflammation. The names of the next three imply their origin. As the existence of the fifth species may be doubted, we quote the following case.

A young lady, aged 21, was seized with *eczema* of the scalp. The affection soon quitted the head, attacked the face, and spread to the alæ and fossæ of the nose. The face was cured, the nasal fossæ became better, but severe sore throat supervened. This being got over, obstinate cough and *aphonia* succeeded. These by proper treatment disappeared; but the disease returned to the fossæ and alæ of the nose. These parts were again cured, and, fifteen days afterwards, the larynx was affected anew. Constitutional treatment was now substituted for local, and the patient recovered. She is still, however, subject to hoarseness from the slightest cause.

Referring our readers to the work for instances of the other species of the disease, we proceed to the symptoms.

V. Symptoms.—MM. Trousseau and Belloc consider, first, the symptoms of the disease in general, and then those of each species.

A. *Symptoms of phthisis laryngea in general.*—These are local and general. The local are derived from the tone of the voice, cough, expectoration, pain, appearances, feel, state of the respiration, mode of deglutition. The general symptoms are scarcely observable, except where the disease is in the acute stage, or at the last of the chronic.

1. *Alteration of the tone of the voice.*—This is one of the earliest symptoms which strike the attendant. At first it is sometimes mere weakness, but more frequently distinct hoarseness. The hoarseness is sometimes continued, and at other times comes on only when the larynx is fatigued, or the patient is exposed to a temperature which differs much from that in which he usually lives. It is a curious fact connected with this, that the hoarseness is greater when the patient passes from a cold to a hot temperature, than it is when the transition is from a medium temperature to a cold. This phenomenon the authors do

not attempt to explain. It is more easy to understand how the voice should be less hoarse in the morning than in the evening, because in the former case the larynx has been at rest during the night, while in the latter it has been exercised during the day. One circumstance has been overlooked by authors, that when hunger is severe, the hoarseness is much increased, but disappears after a meal. These may appear trifling circumstances to note, but they are extremely useful in aiding the diagnosis in doubtful cases. Immediately before menstruation, as well as after venereal indulgence, the hoarseness becomes greater.

Dividing the duration of the disease into three periods, it will be found that during the first the hoarseness is intermittent, during the second it becomes continued, and so may remain to the end, though more frequently complete *aphonia* supervenes during the second stage.

It is difficult to describe the different shades of hoarseness. The authors name two, the mucous and the stridulous, *(strident.)* The former is heard in the most simple cold, and generally indicates only catarrhal inflammation; the latter is almost always the result of ulceration or vegetations within the larynx.

Aphonia may be intermittent or continued. In the former case the voice is lost at night, while in the morning or after a meal it is merely hoarse. In such instances the affection of the larynx is more superficial, and usually catarrhal. Continued *aphonia* is a bad symptom. When it comes on at once in the acute stage of any disease of the larynx, and continues during the chronic, it is not so formidable as when it comes on gradually; and that succeeding mucous is less severe than that supervening on stridulous hoarseness.

Inequality of voice is a symptom which more frequently occurs in laryngeal phthisis than the patients themselves suspect. When the larynx is diseased the volume of the sound emitted is lessened, and in general the emission of air is proportioned to the intensity of the voice. Hence discordant and unequal intonation is avoided. In those, however, who attempt to give the full developement to their voice which it possessed before, it becomes discordant and squeaking. The authors have observed this in several singers and advocates. This inequality resembles what occasionally takes place in young men at puberty. The latter, however, differs from the former in not being accompanied by hoarseness.

2. *Cough.*—The cough, in general, is more frequent in diseases of the larynx than in those of the chest. Its sound always resembles that of the voice. In those affected with *aphonia*, or stridulous hoarseness, the cough is very peculiar. The authors denominate it eructating *(èructante,)* because it resembles sup-

pressed eructation, (*un rot etouffé.*) This is owing either to immobility of the *glottis*, or to deep ulcerations rendering its occlusion impossible, and, therefore is always an unfavourable symptom.

The difference in the frequency of the cough in different patients is altogether inexplicable at present. Some are teased with an incessant cough, which not only does not give them a moment's respite, but causes the food to be rejected; and others, in whom after death the same lesions are found, have scarcely coughed at all.

In the first stage of the disease the cough is usually quieted by swallowing either liquids or solids. But in the last stages the meat and drink penetrate in part into the larynx, and occasion convulsive cough, which nothing can moderate. The frequency of the cough is not so formidable a symptom as its hoarseness, or the alteration of the tone of the voice. Patients sometimes cough obdurately for years, in whom the lungs are free, and the *larynx* sound.

3. *Expectoration.* In simple laryngeal *phthisis*, the expectoration is mucous, transparent, possessed of little viscidity, and more or less abundant. Its viscidity is in an inverse ratio to its abundance. When ulceration exists, the expectoration, without losing the characters just mentioned, exhibits others. Small puriform masses, frequently streaked with blood, or altogether bloody, are brought up with effort.

4. *Pain.* In most of the cases of ordinary laryngeal *phthisis*, no pain is felt during any period of the disease, and it is a remarkable fact, that those who have suffered most at the beginning, and in the acute stage of the disease, have no pain when the mucous membrane and cartilages are destroyed by ulceration or *necrosis*. In some few patients, there is slight pain in the region of the larynx, and especially at the commencement of the *trachea*. It may be only a feeling of smarting, and rarely annoys the patient much. The pain, however, in almost all is very acute in swallowing, and the patients take care to mention that they suffer only during deglutition, and not in breathing or speaking, and refer to the pharynx as the seat of the disease. If the pharynx be examined at this period, nothing will be seen, but, on inspecting the body after death, the larynx will be found considerably diseased. The pain in swallowing is owing to the *larynx* completing the pharynx in front, so that during deglutition the alimentary mass is pressed against the inflamed tissues of the former organ.

5. *Symptoms obtained by inspection.*—Inspection gives but little assistance in recognizing affections of the larynx. The exami-

nation, however, of the fauces ought never to be neglected, especially in the syphilitic species of laryngeal *phthisis.* The state of the *uvula* demands attention, because its elongation may produce severe inflammation of the larynx.

The examination of the *epiglottis* is extremely important, because the larynx is never severely affected without this organ participating in the disease. It is very seldom, however, that a good view of the *epiglottis* can be obtained. MM. Trousseau and Belloc have met with only two patients in whom they could see the whole of its superior surface. By causing the patient to utter cries during the examination, the epiglottis will be observed to be carried forward at each expiration. In the two patients alluded to, in whom the disease was not far advanced, the mucous membrane covering the epiglottis was of a cherry-red colour, and remarkably thickened, and it is probable that the aryteno-epiglottidean ligaments and the mucous membrane lining the larynx were similarly affected.

It would be very desirable to have some means of examining the larynx by a speculum, and the authors have been occupied for some years in producing one. Whether they have been successful or not, they do not say. To those of Selligue and Sanson, they offer powerful or rather insurmountable objections, and assert that it was impossible for Bennati to have seen the *glottis* with the *speculum* of the former. In general he could see only the superior part of the *epiglottis*, very rarely the superior opening of the larynx, and that only when an accidental position of the epiglottis permitted it.

The authors state that they have never seen swelling in the anterior region of the neck in simple laryngeal pathisis, nor is it likely that they should, because the cellular membrane is separated from the subcutaneous cellular tissue by the whole thickness of the cartilages. Even when these are affected with *necrosis* or caries, there is very rarely any external swelling which could give the observer the slightest reason to suppose that so severe lesions existed. On one occasion, MM. Trousseau and Belloc saw a tumour point between the cricoid and thyroid cartilages, which, though almost inappreciable at first, coexisted, nevertheless, with well marked laryngeal *phthisis.* Tracheotomy was performed to prevent *asphyxia,* and the tumour afterwards increased and became an enormous cancer.

6. *Symptoms obtained by touch.*—Some authors reckon crepitation on touching the larynx a pathognomonic sign of *phthisis laryngea.* MM. Trousseau and Belloc at first placed full confidence in this symptom, supposing it to be produced by the friction of necrosed portions of cartilage. They soon found, however, that it occurs when the larynx is perfectly sound. Though

its value is thus so far diminished, it ought not to be neglected. But great attention ought to be paid, in order to distinguish whether the crepitation be produced by the friction of the cartilages of the larynx on the anterior part of the vertebral column, or by the rubbing of portions of these cartilages separated from each other by *caries* or *necrosis*. In the latter case, the sound will probably be more dry, and may be produced by rubbing the *larynx* between the fingers, while in the former case it occurs only when the larynx is moved as a whole. They admit, however, that they have never perceived very distinctly the crepitation resulting from a diseased state of the *larynx*.

Almost all the works which treat of œdematous laryngeal *angina*, recommend feeling the larynx through the mouth. Now, in the first place it is physically impossible to explore the state of the *glottis*, it being impossible for the finger to penetrate into the larynx. The epiglottis and superior part of the larynx, then, can alone be examined in this manner. This examination, however, is much more difficult than those writers imagine, who recommend it, probably without having tried it in any great number of cases. It is far from being as easy a matter to reach the parts alluded to, as to feel the neck of the *uterus*, for as soon as the finger has merely touched the *epiglottis*, a powerful and general spasm of all the parts touched supervenes, which prevents the finger from being applied beyond a second or two, and renders it impossible for the medical man to ascertain any affection which is not very well marked, such as vegetations or tumours. It is very difficult, if not impossible, to ascertain by this means, the existence of ulceration in the aryteno-epiglottidean ligaments, for the authors have never been able to do so, though accustomed to this kind of examination. MM. Trousseau and Belloc also state, that they also consider it very difficult, if not impossible, by this means to recognize œdematous *angina laryngea*.

7. *Signs furnished by respiration.* Under this head, the authors enter into some physiological discussions, for which, though ingenious and interesting, we cannot spare room. We therefore content ourselves with giving the practical results. During the first stage of the disease respiration in general is little or nothing altered. But after a time, anhelation occurs, which, unless the disease be checked, goes on increasing till death takes place. This anhelation may arise from two causes, muscular debility, the result of general weakness, or narrowing of the orifice of the larynx. In the latter case it follows the following course. At first the patient feels himself liable to what he calls fits of asthma, which most frequently come on at night. At a later period, the severity of the paroxysms is in-

creased, and the oppression is permanent. The patient cannot breathe in his bed, unless supported with pillows, and then the inspiration is habitually sibilous, and the expiration loud and prolonged. Paroxysms of true orthopnœa soon supervene, during which there is extreme anxiety and threatened suffocation, and generally, within fifteen or twenty days from this time, the patient is suffocated. . . . .

8. *Signs furnished by the mode of deglutition.* The manner in which deglutition is performed is of little consequence in judging of the form and extent of diseases of the *larynx* and its appendages. In several cases reported by the authors, the food fell into the larynx, or returned by the nose, when the *epiglottis* was entire, while in others deglutition was performed without difficulty, though the *epiglottis* was altogether or nearly destroyed. . . . .

B. *Of the differences of the symptoms observed in different species of Phthisis Laryngea.* The general symptoms already mentioned are, with few exceptions, found in all the species. The altered tone of the voice, cough, local swelling, and peculiarity of respiration and deglutition, are the same in every form of laryngeal *phthisis*, because they depend upon organic modifications common to all, inflammation, ulceration, and narrowing of the larynx. But each species exhibits, besides, these other symptoms which are now to be noticed.

1. *Syhhilitic laryngeal phthisis.* This species is characterised by symptoms which are of great use in forming a diagnosis. Most frequently the disease of the larynx is produced by an extension of affections which have been already observed in the nasal fossæ, or in the back part of the mouth, and hence deglutition is generally more painful in this than in the other species. This pain in deglutition is easily accounted for by the state of the fauces, which are covered with ulcers, or marked by cicatrices. The *velum palati* is sometimes ulcerated. In all cases, considerable *erythema* of the mucous membrane exists, and very frequently more or less swelling of the submucous cellular tissue, and sometimes œdema of the uvula and anterior pillars of the fauces. Examination with the finger is of great consequence in this form of the disease, and should never be neglected. When the disease, however, is exclusively situated in the larynx, and especially in the ventricles, there is no particular symptom by which it may be distinguished, and it can be recognized only by the previous history of the case, or the secondary symptoms of syphilis appearing on other parts of the body. .

The progress of syphilitic is not the same as that of simple laryngeal phthisis. The latter generally originates in the *la-*

rynx or *trachea*, whereas the former usually spreads from the *pharynx* and nasal *fossæ*. It is of great practical importance to attend to this, because experience shows that the *larynx* is usually affected in the same manner as the throat. Thus when an erythematous syphilitic affection is observed in the throat, the affection of the larynx will not be of an ulcerous nature, and, on the contrary, when the tonsils, and *velum palati*, and nasal *fossæ* are deeply ulcerated, we may expect to find the *larynx* ulcerated or eroded.

2. *Tubercular Laryngeal Phthisis*. We have already mentioned that MM. Trousseau and Belloc consider laryngeal phthisis to be tubercular, whenever it coexists with tubercular pulmonary *phthisis*. Hence it follows, that, in addition to the symptoms of simple laryngeal *phthisis*, we shall find those of pulmonary consumption. By means, then, of the stethoscope, the nature and abundance of the expectoration, and the rapidity of the consumption, this form of the disease may be distinguished. When tubercles are once developed, the laryngeal affection proceeds with great rapidity. In patients affected with tubercles, inflammations, the most simple in their cause, have a tendency to become incurable. Thus the slightest sprain may give rise to white swelling, and the slightest inflammation of the larynx to *phthisis laryngea*. In forming our diagnosis or prognosis of diseases of the larynx, then, the examination of the state of the lungs should never be omitted.

3. *Cancerous Laryngeal Phthisis*. It might be supposed that this form of the disease might be recognized by the touch, and certainly, if a tumour can be felt with the finger, and other symptoms of cancer be present, no doubt can exist as to the nature of the disease. But this is rarely the case. In the only case of this species of laryngeal *phthisis* which the authors met with, the patient never complained of lancinating pains, and his countenance had not that peculiar tinge which characterizes the cancerous diathesis.

C. *Diagnosis*.—The diseases with which *phthisis laryngea* may be confounded are, *phthisis trachealis*, œdematous laryngeal *angina*, and asthma. MM. Trousseau and Belloc consider it impossible to distinguish between tracheal and laryngeal phthisis, because they are almost always united. The same nearly may be said regarding the second disease mentioned. When it is acute it can be confounded only with croup, and when chronic, which is most frequently the case, it is most frequently a termination of laryngeal phthisis, and, therefore, symptomatic of it. The authors' views on the connection between laryngeal phthisis and *œdema glottidis* we shall give immediately. The two diseases first mentioned being thus disposed of, the distinction between asthma and laryngeal phthisis remains to be drawn.

The only form of asthma with which the disease now under consideration can be confounded is that peculiar nervous affection of the respiratory apparatus, chiefly characterized by paroxysms of *orthopnœa*, followed by a more or less tranquil state of the respiration. When two paroxysms of *orthopnœa* are observed, the one produced by asthma, and the other by *phthisis laryngea*, we are struck with their great resemblance. The attitude of the patient, the expression of his countenance, and the muscular efforts in both are alike. There is one pathognomonic symptom, however, by which we are enabled to distinguish them. In asthma the voice is sonorous, in *phthisis laryngea* the voice is lost *(eteinte.)* If, however, instead of merely considering the paroxysm, we compare their other symptoms, the *diagnosis* will be easy. In asthma the oppression of breathing comes on suddenly, without any appreciable cause, and at the end of a few hours leaves the patient fatigued, no doubt, but otherwise in the same state of health as it found him. But in laryngeal *phthisis* the *orthopnœa* comes on gradually in most cases, and is preceded by difficult respiration, more or less appreciable, and an alteration of the tone of the voice. When the paroxysm is over, the respiration is far from being free, and each succeeding fit becomes more and more severe, till *asphyxia* puts an end to the patient, unless relieved by a surgical operation. It is easy, then, to distinguish between two diseases so different in their characters.

VI. TERMINATIONS.—The terminations recognized by the authors are death, *œdematous laryngeal angina, and cure.* Before showing how simple laryngeal *phthisis* produces death, they proceed to explain how this generally occurs in phthisical patients. Consumption cannot be said to be *pulmonary* in the strict sense of the word, except when, from suppuration, chronic inflammation, and tubercular degeneration of the lung alone, the patient passes through all the degrees of marasmus, and life is extinguished without any other organ being affected. This, however, is rarely the case, and death seldom takes place without numerous organic lesions occurring, which, though secondary, are frequently more speedily fatal than the primary affection. It being thus established that in pulmonary phthisis, although the first disturbance is in the lung, death is commonly occasioned by the functional and organic diseases of other parts, it is more easy to ascertain the true nosological arrangement of tubercular laryngeal phthisis. To constitute this disease it is not necessary that death should result from the affection of the larynx alone, but that this affection should have been the primary, and the others simply the result of it.

In *simple* laryngeal *phthisis*, death most frequently happens before ulceration of the larynx has caused true consumption. The extreme difficulty of respiration, the difficulty and pain of deglutition, and the severity of the cough, are sufficient, in most instances, to produce a fatal termination before *marasmus* occurs.

In respect to *tubercular* laryngeal *phthisis*, the authors have come to the following conclusions:—1. The lungs are most frequently affected before the *larynx*. 2. In some rare cases the matter is reversed. 3. Both diseases sometimes originate at the same time, and advance *pari passu*. 4. In this last case the larynx appears to be alone affected, because the laryngeal symptoms predominate, and it is extremely difficult, in consequence of the state of that organ, to ascertain by the stethoscope the state of the lungs.

Among the terminations of laryngeal *phthisis* one of the most severe is swelling of the margins of the *glottis*, and the authors devote several pages to the consideration of the connection between œdematous laryngeal *angina* and the disease under consideration. Our limits, however, do not permit us to give more than the conclusions to which these investigations seem legitimately to have led them.

Bayle properly distinguishes œdematous laryngeal *angina* into primitive and consecutive. The former is almost always the result of an inflammatory affection of the *larynx* and neighbouring parts, and does not differ in its nature from those described by Boërhaave in his 801st and 802d aphorisms. The consecutive is occasioned by organic lesion of the larynx and its connections, and may be either inflammatory, or active, or non-inflammatory, or passive. In the former case the inflammation spreads from the point first affected to the mucous membrane of the larynx; in the latter the serum accumulated under this membrane is owing only to the accumulation of fluids around the part destroyed. In both cases œdematous laryngeal *angina* depends upon inflammation. In fine, laryngeal *phthisis*, whatever be its cause, must be looked upon as the most frequent occasion of œdematous laryngeal *angina*.

Laryngeal phthisis may terminate favourably, and, of course, the less progress the disease has made the greater the chance of cure. When the disease has advanced considerably, and the system is weakened by *dyspnœa*, cough, prolonged abstinence, or marasmus, there is little hope of saving the patient. The authors, nevertheless, narrate several cases where patients, in whom the disease had made great progress, were saved from imminent death; and a remarkable instance is given by Morgagni, in the 15th article of his 44th Epistle, in which an old man affected with severe syphilitic laryngeal phthisis was cured. Such narratives show the necessity of persevering as long as there is the slightest shadow of hope in our endeavours to save the patient.

VII. Treatment.—In the treatment of any disease the physician ought to direct his attention with as much solicitude to the means of obviating the first symptoms as to those of combating the disease when it is fully established. In most cases laryngeal phthisis begins with a slight affection of the organ, which becomes chronic, and, in this instance, the means usually adopted in the treatment of simple catarrh will prove sufficient. When, however, the inflammation does not yield, but appears daily to become worse, when hoarseness, aphonia, and the characteristic cough already described are present, it is necessary to have recourse to more energetic means, the value of each of which the authors endeavour to ascertain seriatim.

1. *Rest of the organ.*—The condition most indispensable to the successful treatment of diseases of the larynx is rest of the organ. The patients ought to speak in a whisper, or content themselves with expressing their meaning in writing. The authors, however, have been convinced by experience that speaking in a whisper is attended with no evil, provided the patient does not exert himself to render what he says more distinct, and all who have treated such cases know how difficult it is to keep a patient silent for several months running.

2. *Antiphlogistic remedies.*—Blood-letting is one of the most efficacious means which can be employed at the beginning of the disease. The authors commonly prefer general to local. If the latter should be had recourse to, the number of leeches applied ought to be great. Cupping on the nape of the neck is useful, but inferior to the means just mentioned. If there be reason to suppose that the disease arises from suppression of the menstrual or haemorrhoidal discharge, leeches ought to be applied in the former case to the thighs or *vulva*, and in the latter to the *anus*. Emollient applications are rather hurtful than useful, from their producing an afflux of blood to the affected parts.

3. *Revellents.*—When the disease has been of some standing, revellents are more efficacious than blood-letting. Blisters are advantageous if long kept running. They ought to be applied to the back of the neck, because, when placed on the front of the neck, they are too annoying to be endured, especially by men whose beards are thick. Setons and the potential cautery applied to the anterior part of the neck are also very useful.

Revellents applied at a distance from the seat of the disease have not been found by the authors to be efficacious.

4. *Narcotics.*—These are of great use in assuaging the pain, prickling, and cough. The authors prefer the extracts of *Stramonium* and *Belladonna*, applied by friction to the anterior part of the neck, or the salts of morphia introduced by the endermic method.

5. *Topical means.*—When inflammation becomes chronic, and affects only a very circumscribed part of the economy, it almost always resists even the most extensive general treatment, and, on the contrary, it is almost always modified by topical treatment, whatever be the means. This to a certain extent explains the difficulty with which internal local diseases are cured, compared with those which are external. It is obvious, then, that by any means local applications could be made to the mucous membrane of the *larynx*, without interrupting respiration. Many cases might be cured which are now incurable, and this the authors take the credit of having done.

A. *Inspiration of dry or moist vapours.*—This has long been recommended in *phthisis laryngea* and other affections of the respiratory apparatus. Most frequently the vapour of water was employed, either simple or charged with emollient, balsamic, or aromatic substances. Sometimes the vapours were dry, as the smoke of tar, resin, hyoscyamus, tobacco, poppy, &c. The moist vapours have also been charged with chlorine, iodine, hydrosulphuric acid, and different essential oils, with some effect on the mucous membrane of the air passages, as shown by the experience of Gannal, Cottereau, Richard, and the authors. MM. Trousseau and Belloc have also caused patients to inspire cinnabar, sulphuric acid, &c. with very variable results. But all inhalation, of whatever nature, is liable to the objection that the substance inhaled is not confined to the larynx, but comes in contact with the mucous membrane of the lungs, which it may irritate. It is impossible to limit its action, and hence the authors now employ only emollient, aromatic, balsamic, and narcotic vapours, and such as cannot exercise any evil influence over the lungs.

B. *Liquid applications.*—The liquid applications used by the authors consist of solutions of nitrate of silver, corrosive sublimate, sulphate of copper, and pernitrate of mercury. They prefer, however, the nitrate of silver, from the application of which no inconvenience has arisen. The solution of corrosive sublimate, of the strength of from one to eight grains to the ounce of distilled water, they found to be very serviceable in some cases of syphilitic ulceration.

To apply these solutions to the larynx, MM. Trousseau and

Belloc make use of a fine sponge of a spherical form, from six to eight lines in diameter, which they fix firmly to a bit of whalebone, forming at one of its extremities an obtuse angle of about 95°. By means of this instrument, they are enabled to touch both surfaces of the *epiglottis*, the *pharynx*, and superior part of the *larynx*. The authors have also another means of effecting their object. To a small silver syringe like that of Anel's a canula, at least five inches in length, and curved at its free extremity, is attached. The syringe is filled three-fourths with air, and one-fourth with a solution of nitrate of silver. The canula is then introduced into the posterior *fauces*, opposite the *larynx*, and the piston being rapidly advanced, the liquid mixed with the air in the syringe falls in a fine shower on the superior part of the *larynx* and *œsophagus*. The patient is immediately seized with a violent fit of coughing, which, however, need give no alarm. He is then immediately to be directed to gargle his throat with water, acidulated with muriatic acid or with salt water, which immediately decomposes that portion of the solution which is not combined with the tissues. The authors bring forward several most interesting cases, showing the efficacy of this mode of treatment.

C. *Applications in the form of powder.*—The authors have applied medicines in the form of powder to the larynx by means of insufflation. Among them may be mentioned in an inverse order to their power,—magistery of bismuth, alum, acetate of lead, sulphate of zinc, sulphate of copper. Calomel, and red precipitate, also produce remarkable results in cases of ulceration, whether syphilitic or not, of the mucous membrane of the larynx. All these, except the sub-nitrate of bismuth, which may be employed pure, ought to be mixed with powdered sugar-candy, in variable proportions according to their activity. Insufflation of any powder into which mercury enters ought not to be repeated, especially at first, more than two or three times a week. Unless this precaution be adopted, they may aggravate instead of curing the disease. It is unnecessary to describe the instrument with which insufflation is performed.

6. *General mercurial treatment*—The authors cite numerous cases of the efficacy of this plan of treatment, even when the disease was not of the syphilitic species. Many cases truly desperate were cured by giving mercury to salivation.

7. *Iodine.*—The authors tried iodine in two cases, in the one successfully, in the other not.

8. *Sulphureous mineral waters.*—These, though of secondary importance, the authors think useful, especially in recent or slight cases of the disease.

9. *Treatment by applications to the pharynx.*—In treating

of the causes, it has already been stated that chronic inflammation of the *larynx* and laryngeal *phthisis*, which results from it, frequently originate in inflammation of the mucous membrane of the tonsils, *velum palati*, and enlargement or relaxation of the *uvula*. Caries also of one or more of the teeth, giving rise to a determination to the throat, occasionally induces chronic *laryngitis*. A famous singer, Madame Mainvielle Foder, is said to have lost her voice in this way. In such cases the cure of the primary disease is sufficient to put an end to the secondary. Bennati attaches great importance, in such cases, to applying the curative means to the tonsils and base of the tongue, and highly extols gargles of alum and sulphate of zinc. MM. Trousseau and Belloc prefer the nitrate of silver, and, when *angina pharyngea* coexists with chronic laryngitis, they touch, two or three times a week, the tonsils and arch of the palate with a pencil of nitrate of silver, or a solution of the same, or a powder composed of six or eight grains of the salt to about a drachm (one gros) of powdered sugar-candy. A saturated solution of corrosive sublimate or of sulphate of zinc will fulfil the same indication. Even when the mucous membrane lining the posterior fauces is not affected with chronic inflammation, the same means may be used to combat chronic laryngitis.

10. *Tracheotomy.*—However skilful the treatment may be, accidents may occur, threatening to deprive the patient of life by suffocation. In such cases tracheotomy is the only resource. This operation ought not to be performed, except when the patient is threatened with suffocation, and, immediately after it has been performed, a canula, of sufficient diameter to admit the air into the lungs, should be introduced, and allowed to remain. Freed then from the fear of seeing his patient die of asphyxia, the attendant may proceed to treat the affection of the larynx in a suitable manner, and when the organ is capable of performing its functions the canula may be withdrawn, when the wound will rapidly heal. Even if the disease be of such a nature that the passage of the air through the natural canal is afterwards impossible, the canula may remain for an indefinite period, and the life of the patient be so long lengthened. The authors give an instance of an individual wearing one of silver for ten years. Even though the disease be of the cancerous or tubercular species, the operation will be useful, because the life of the patient will be prolonged till the constitutional irritation put an end to it. Numerous cases are cited which show, in a clear manner, the advantage of the operation in *phthisis laryngea*.

We have now laid before our readers a view of all the facts and doctrines contained in the book. The cases illustrative of these, to the number of sixty-one, merit an attentive perusal; and, had our limits permitted, we would have transferred some of them with the authors' critical remarks to our pages. The plates, as works of art, are well executed, and give an accurate view of the appearances described by the authors.

Art. IV.—*Surgical Observations on Tumours, with Cases and Operations.* By John C. Warren, M. D., Professor of Anatomy and Surgery in Harvard University, and Surgeon of the Massachusetts General Hospital. Boston, 1837, 8vo. with coloured Plates. Pp. 607.

Dr Warren, the author of the present volume, early distinguished himself by the publication of a small but excellent Memoir on Organic Diseases of the Heart, illustrated by cases and dissections, which evince great acuteness of observation, and originality of thought.* The justly celebrated work of Corvisart had appeared at Paris in 1806, but was still little known in other European countries, from the restraints in communication with the continent; and in the brief essay of Dr Warren, which appeared at Boston in 1809, were given in the English language the first sound and rational notions on the nature, diagnostic symptoms, and characteristic effects of diseases of the heart, the confirmation and diffusion of which has formed the honour and value of modern pathology. It is true that the same year witnessed, in this country, the appearance of the valuable work of Mr Allan Burns, which still continues to be an instructive volume to the medical reader. But this circumstance does not diminish the merit of Dr Warren, who is still entitled to the honour of being the first to communicate to his countrymen, and to English readers generally, those correct and original views on the diseases of the heart, which he had partly learned from the clinical instructions of Corvisart, and partly acquired and confirmed by his own personal experience.

Of the essay of Dr Warren a short notice appeared in the seventh volume of this Journal, which renders it superfluous now to enter into any detail on the work. But at this interval of time, amounting now to twenty-six years, it is a matter of some interest to observe, that a work, however small, which is the fruit of observation, has rather increased than diminished in value. The practical observer will recognize, even at this advanced period, when the writings of Corvisart, Laennec, Kreysig, Schina, Testa, and Hope are more or less familiar to all, many important observations, pathological and practical, to which time has added increased value. Dr Warren, for instance, remarks as symptoms of the presence of disease of the heart, the irregular and tumultuous action of the organ, the visible pulsation, pulsation below its usual site, pulsation in the epigastric region, and pulsation on the right of the sternum; the difficult breathing and panting on ascending an eminence, making any great effort or catching cold, and the susceptibility to catarrhal and bronchial attacks; the occasional or permanent lividity of the countenance, and the permanent dark or dingy colour assumed by the skin, especially of the extremities. He further remarks, as changes produced in the vascular system, and especially its venous division, that the veins are swelled with blood; that the countenance is high-coloured, except in fits of dyspnœa, when it becomes livid, and that it is very frequently puffed or turgid, evidently alluding to the bloated, distended aspect so common in most of the diseases of the heart. To the same head he refers the giddiness and headach which are usual concomitants of this disorder. He had also remarked the peculiar character of the pulse in the different cases of the open and obstructed state of the apertures from the heart. In the former case he observes it remains tolerably regular, and is either hard, full, quick, vibrating, and variable, or soft, slow, compressible, and variable. In the latter case, he justly remarks, viz. that of obstruction, or what we would now express by the term induration of the valves, with contraction or arctation of the apertures, that the pulse, though vibrating, becomes very irregular, intermittent, "sometimes contracted, and almost imperceptible, very variable, often disagreeing with the pulsations of the heart, and sometimes differing in one of the wrists from the other."

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* Cases of Organic Diseases of the Heart, with dissections, and some remarks intended to point out the distinctive symptoms of these diseases. By John C. Warren, M. D. Boston, 1809. 8vo. Pp. 61.

To those who have paid much attention to the characteristic symptoms of disease of the heart, it is needless to say how accurately this account agrees with what is presented by the functions of these unfortunate subjects.

But the acuteness of Dr Warren appears not only in the watchful observation of the symptoms now specified, but in remarking the tendency to hemorrhage on the one hand, and dropsical effusions on the other, induced by the presence of disease of the heart, and confirming the distinction then first announced by Corvisart of the complete difference between these effusions and that of hydrothorax. "Some may think," he says, "that there is no essential difference in the symptoms of these diseases;" viz. disease of the heart and hydrothorax. But, he adds, "the resemblance between them is merely nominal;" and after giving a diagnostic sketch, he concludes by the following question, anticipating one of the doctrines of Laennec,—May not primary hydrothorax be much less frequent than has commonly been imagined? and maintains in like manner the extreme rarity of idiopathic dropsy of the pericardium.

It is needless, however, to dwell on these details in a work which, though short, contains perhaps the best account of the mere rational signs of disease of the heart yet extant; and which at the present day will be studied, we are confident, by those who have paid most attention to the subject, both with profit and delight.

It may be expected that a work possessed of so much merit, and which gave earnest of more, would be followed by other proofs of industrious and acute observation; and though Dr Warren has not in the interval published much, it will soon appear that he has written to good purpose. He seems to be one of those conscientious persons who will not come before the public with any literary performance until they have been enabled, by extended experience, and repeated deliberate reflection, to render their communications as faultless and perfect as possible. The subject which Dr Warren has undertaken to elucidate, it cannot be denied, demanded a considerable proportion of this deliberate and careful procedure; and as it must have been pretty clear to those who have devoted any attention to it, that temporary and desultory research must have produced only ephemeral and comparatively useless results, he has studied to obviate this objection by bestowing on the subject the experience of nearly a whole lifetime.

It is at the same time just to Dr Warren to mention that, though the present volume has evidently occupied the leisure moments of a long series of years, these leisure moments have been, from the peculiar circumstances of American professional occupation, few and far between; and latterly, particular circumstances connected, as we are informed, with the health of the author have compelled him to accelerate somewhat the completion of his work. The account which we are now to give will, we trust, enable the reader at once to appreciate the merits of the work of Dr Warren, and to judge to what extent it may have suffered injury by the causes now referred to.

The term Tumour was not at all times employed in the precise and definite manner, in which it is used at the present day. The anatomists and surgeons who laboured to improve their art after the revival of literature in the sixteenth century, generally followed the example of Galen, in treating, under the comprehensive title of *Tumores praeter*, *vel contra naturam*, of the different acute inflammations of the skin, the adipose and cellular membrane, and their terminations, as rose, erythema, phlegmon, and several cutaneous eruptions, œdema, many chronic inflammatory disorders, the encysted tumours known under the names of *steatoma*, *atheroma*, and *meliceris*, even such diseases as aneurism, varix, and hernia, and lastly, scirrhus and cancer. Such was the practice of Ingrassias,[*] Fallopius,[†] Fabricius of Aquapendente,[‡] Riolan,[§] and all their contemporaries. Such also was the practice of the professed surgeons, as Ambrose Paré,[‖] our industrious countryman Peter Lowe, the founder of the Glasgow Faculty of Medicine and Surgery,[¶] and his contemporary, Doctor Alexander Read, the first who delivered a special course of Lectures on Tumours, at the Chirurgeon's Hall in London,[**] as well as their successor Richard Wiseman.[††] The former of the two last authors, who may be regarded as presenting the general surgical doctrines of the day on this point, after giving the definitions of Galen and Fallopius, and showing their inadequacy to convey a correct idea of the object, adds as his own, the following: "A tumour against nature is most frequently a disease, sometimes a light affection, for the most part incident to the organical parts, increasing their quantity above nature, by reason of receiving superfluous humours sent from other parts," to which he afterwards adds, with "solution of unity either manifest, or latent, or occult," and "some distemperature either simple or compounded." It is not wonderful that under this comprehensive and not very intelligible or significant definition, the learned lecturer treats successively of phlegmon, erysipelas, including not only the St Antony's fire, but *herpes miliaris*, and *exedens*,—œdema, scirrhus, aqueous tumours and flatulent tumours. Similar also was the method of Wiseman, who further treats under the same head, like Paré, of boil, *epinyctis*, carbuncle, whitloe, and even several cutaneous eruptions.

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[*] Joannis Philippi Ingrassias De Tumoribus praeter naturam. Neapoli, 1553, fol. Venetiis, 1568.

[†] Gab. Falloppii Libelli duo, alter de ulceribus alter de tumoribus praeter naturam. Venetiis, 1563. In 4to.

[‡] Hieronymi Fabricii ab Aquapendente Opera Chirurgica in duas partes divisa, &c. Patavii, 1617, in folio. Libri secundi.

[§] Universae Medicinae Compendium per Joan Riolanum. Therapeutica. Particularis Methodi bene medendi sectio secunda, in qua tractatur, de tumoribus contra Naturam. Apud op. omnia. Parisiis, 1610.

[‖] Les Oeuvres d'Ambroise Paré, &c. Folio. Paris, 1561. Translated out of Latin, and compared with the French. By Thomas Johnson. London, 1678. Lib. vii. Of Tumours against Nature in general.

[¶] A Discourse of the whole Art of Chirurgery, &c. compiled by Peter Lowe, Scottishman, Doctor in the Faculty of Surgery at Paris, and Ordinary Surgeon to the French King and Navarre. Dated 1612. London. A. D. 1634, third edition.

[**] The Chirurgical Lectures of Tumours and Ulcers, delivered on Tuesdays, appointed for these exercises, and keeping of their courts in the Chirurgeon's Hall, these three years past, viz. 1632, 1633, and 1634. By Alexander Read, Doctor of Physic, and one of the Fellows of the Physicians College of London. London, 1635.

[††] Several Chirurgical Treatises. By Richard Wiseman, Sergeant-Surgeon. London, 1676. Small folio. Treatise I. of Tumours in general.

The same idea nearly was attached to the word tumour by the surgeons who flourished during the early part of the eighteenth century. Deidier, an eminent physician of Montpellier, who may be taken as an example, after telling his reader, after the manner of Galen, that tumours are either natural or unnatural, defines the latter to be a disease in which the parts of the human body quit their natural situation, and increase in volume; and that this enlargement may be the effect either of fluids accumulated and stagnating in the part, or of gaseous matters collected in it, or of a faulty situation of the solid parts.* He also makes his work a sort of elementary treatise on surgical diseases, and treats of phlegmon, erysipelas, œdema, scirrhus, cancer, scrofula, carbuncle, gangrene, and sphacelus, whitloe, itch, tetters and leprosy, scalled head, and small-pox.

We shall only add, that, in the most complete treatise on this subject, which appeared anonymously at Paris in the year 1759, and which is represented to be the work of an old physician who had spent his life in studying, practising, and teaching medicine, the same definitions were given, and the same characters assigned to tumours; and the author consequently embraces in his arrangement, the history and treatment of all the local inflammatory diseases of the skin, adipose tissue, glands, tendons, tendinous sheaths, and even the periosteum. It must be allowed, however, that the author of this treatise, which some were disposed to ascribe to the pen of Astruc, has taken a much more comprehensive, and, on the whole, a more correct view of the subject than any of his predecessors. His treatise may be regarded as the connecting link between the speculative and rather scholastic works of the sixteenth and seventeenth centuries, and the more practical and didactic productions of modern times. He distinguishes tumours into five general divisions, according as they are characterized by phlegmonous inflammation, erysipelatous redness, œdema, scirrhous or other induration, and tumours not marked by either characters,—into phlegmonous tumours, erysipelatous tumours, œdematous tumours, scirrhous tumours, and scrofulous, encysted, periosteal, and fatty, or sarcomatous tumours; and under each of these separate heads we find a more methodical arrangement, and more detailed accounts than heretofore of the different forms of each kind of tumour. Thus under the head of inflammatory tumours, the author treats not only of phlegmon, abscess, and gangrene, but boil, stye, guinea-worm abscess, carbuncle, whitloe, parotids, and mumps, chilblain and frostbite, and contusion and ecchymosis. Under the head of erysipelatous tumours are considered not only St Antony's fire, but tetters, itch, the blotched face, or varieties of *Acne*, *porrigo*, and its varieties, the *malum mortuum*, or mormal of Chaucer, and older English writers, and *naevi materni*. The œdematous tumours comprehend *œdema* and hydatids. In the fourth book on Scirrhous Tumours, the author treats of scirrhus, cancer, ganglions, warts, and corns. In the fifth book, devoted to tumours not referable to either of the previous heads, are given accounts of, 1. scrofulous tumours; 2. of the different encysted tumours, *steatoma*, *atheroma*, and *meliceris*; 3. goitre or bronchocele, 4. *gummata*, which he represents to be seated either in the cellular tissue, or in the aponeurotic sheaths, or in the periosteum; 5. Fatty tumours, which he regards as the same as sarcomatous; and 6. emphysema.

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* Traité des Tumeurs contre Nature, par M. Deidier, Conseiller Medecin du Roy, &c. 5ieme edition. A Paris, 1732, Chap. i. p. 1.

This work, the arrangement of which was perhaps the best of which the knowledge of the time admitted, and the information in which was certainly much above that of the common run of publications, was criticized in the Medical Journal of Vandermonde with such unjustifiable petulance and severity, that the account given in that Journal was believed to be dictated by some splenetic feelings towards the supposed author.

The anonymous author now mentioned was followed, after the lapse of eight years, by Professor Plenck of Vienna, who published in 1767, his *Novum Systema Tumorum*, in which, though he still followed the general method of his predecessors, and especially the arrangement of the anonymous French author, improved, nevertheless, so much on the whole of them, and gave views so completely new, that the method of Plenck may be regarded as very much his own, and that the work may be viewed as forming an era altogether new in the literary history of this department of pathology. Professor Plenck divides the whole of the tumours observed to take place in the animal body into sixteen classes, according to the nature of their contents, as follows: I. Inflammatory Tumours; II. Purulent Tumours; III. Gangrenous Tumours; IV. Indurated Tumours; V. Aqueous Tumours; VI. Bloody Tumours; VII. Cystic Tumours; VIII. Excrescent Tumours; IX. Osseous Tumours; X. Earthy Tumours; XI. Gaseous Tumours; XII. Salivary Tumours; XIII. Bilious Tumours; XIV. Milky Tumours; XV. Spurious Hernial Tumours; and XVI. Organic Tumours.*

Exclusive of the definitions and methods found in systematic authors, which in general were more or less closely founded upon those already mentioned, no one attempted for some time after this period to give either a definition or a descriptive classification of tumours. But a great and striking change in the state of pathological opinion, if such it could be called, while pathology was yet in its infancy in Great Britain, was slowly but steadily taking place. Surgeons were beginning to draw a distinction between all those swellings which were either the effect or part of the acute inflammatory process, and those which, coming on more slowly, and being developed more imperceptibly, were with greater justice denominated tumours or growths. As the nature and characters of acute inflammation were more attentively studied, and its effects more fully understood, the difference between that process and the slow indolent enlargement observed to take place sometimes after the subsidence of acute inflammation, sometimes with the chronic form of the process, and sometimes without either, was more distinctly seen; and as the anatomical constitution of these tumours began to be examined by dissection, it was then admitted that tumours were a distinct class of bodies, peculiar in origin, progress, anatomical characters, and pathological effects, and whatever circumstances seemed to favour the notion that they were sometimes the effects of inflammation, as in the *mamma*, the testicle, and in some of the lymphatic glands, and that they were almost always attended with some of the characters of the inflammatory process, it was equally required by correct pathology and practice to view them as different in origin and nature.

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* Josephi Jacobi Plenck, Chirurg. et Art Obstet. Magistri Novum Systema Tumorum, quo hi morbi in sua genera, et species redigantur. Pars prima, Viennae, 1767.

There is little doubt that the revolution now indicated was, like many other changes, to be traced, at least in some degree, to the influence of the labours of John Hunter, who, in his unwearied examination of vital phenomena in the animal textures, and the morbid changes in structure consequent upon their perversion, saw that some other principle must be called into operation, in order to produce the developement of these morbid growths. His definition, that a tumour is a circumscribed substance produced by disease, and different in nature and consistence from the surrounding parts, was perhaps the first definition conceived in the true spirit of philosophical distinction. That it is not perfect, as remarked by Dr Warren, is a proof of the extreme difficulty of the task of definition; and while it must be admitted that Hunter has in this approached, as near as the subject then admitted, to the just conception of the object defined, it may be a further conclusion, from the same circumstances, that the subject does not admit of greater precision in distinction.

Mr Hunter was followed by Mr Abernethy, whose classification, which is known to every surgeon, may be regarded as the expansion and developement of the principles of John Hunter in this department of pathology. It would be unjust, however, to the merit of Mr Abernethy, to overlook the clear and able exposition which he has given of the physical, anatomical, and pathological characters of these bodies, and every one must feel that the master was fortunate in an intelligent pupil. The short paper of Sir Everard Home deserves commemoration as a useful commentary on the principles of the same pathologist.

The difficulties encountered by his predecessors have been strongly felt by the present author, who, in a short but well written introduction on the general characters of tumours, *i. e.* morbid growths, thinks, that in answering the question, what is a tumour? the most simple idea is, that *it is an unnatural enlargement of some part of the body.* He admits, however, the defect of this definition, by allowing that the question is immediately suggested, is this enlargement an increase of a natural part or a new formation? and it is well known that this was the great question which perplexed most of the pathologists of the Hunterian school, and which, though several of our foreign brethren have assumed it as answered in the affirmative, may be regarded as still open to investigation. On this point Dr Warren does not say much. "If the former," he says, "we might expect it to consist of a texture similar to that in which it originates; and if the latter, how can we explain the fact, that the vessels of a part generate a substance different from that part?"

This is not the proper place to enter into any inquiry regarding this intricate and difficult question; and to do so would lead us much beyond the proper limits of this article. But, with regard to the first point, it must be admitted that it is now well ascertained that, on the one hand, there occur many tumours in parts presenting a different structure altogether from these parts, though similar in many features to the structure of other tissues; and, on the other, certain tumours occur presenting organization of which there is in the animal body no exact standard or model. But it must be observed, that in the case of the former, which constitutes the abnormal developement of natural structures, these new formations are never so perfect as the natural structures in their proper situation; and if attacked by morbid action, they are invariably destroyed with much greater facility, and much more rapidly. They present also a confused and disorderly arrangement of elements,—showing that there is not only an aberration in the kind of matter deposited, but also in the manner of its deposition. With regard to the second point, viz. why the vessels of a part should generate a different substance from that part, we believe all that can be said is, that such is the fact, and such it must be allowed to remain. To explain every thing is neither practicable nor always safe; and in the present case, it must be regarded as sufficient explanation, that the morbid action consists in the vessels assuming, or being made to assume, a new, a different, and, perhaps, a perverted mode of action. All the explanation that perhaps can be obtained why the vessels of the mamma or testicle secrete scirrhous matter, or the vessels of many textures at once secrete medullary matter, is simply the fact that they do so.

In adverting to the etiology of tumours, Dr Warren, though he allows some influence to the chronic inflammation consequent on violence or injury, maintains, nevertheless, that we must look for accessory causes, as some peculiarity in the accident or in the constitution of the individual, as it is matter of common observation, that such accidents and injuries are by no means always, or in all persons, followed by the formation of tumours. In effusion of blood or effusion of lymph consequent upon these causes, as imagined by Hunter, and illustrated by Home, he thinks we must always add the state of the constitution, either hereditary or acquired, possessed by the individual.

In distinguishing tumours, Dr Warren very properly claims attention to their physical characters and external qualities, as the chief circumstances from which the surgeon can draw any conclusion regarding their nature or contents in the living body.

The difficulty of giving a perfect classification of the bodies denominated tumours, growths, morbid productions, heterologous tissues, &c. has been felt by the majority of pathologists and surgeons. The classification which is founded on their anatomical constitution and physical characters may be inadmissible in a surgical point of view, in which the primary question is generally, what are the tumours which demand removal, what are those in which removal is unnecessary, and what are those in which it is useless, inadmissible, or improper? Thus the classification given by Professor Plenck is neat, clear, and intelligible, because it is chiefly founded on anatomical and physical principles; but it is not particularly convenient for the practical surgeon, because, though it gives the physical characters with as much clearness and precision as the subject then admitted, it does not with sufficient certainty specify those marks, by which the surgeon must be guided, in forming his opinion as to the expediency or the necessity of removal, or the impropriety or the danger of surgical interference. The classification of Mr Abernethy, which was founded on mixed principles, viz. partly anatomical and physical, partly pathological, is perhaps rather more suitable to the purposes of the practical surgeon, and must always be regarded, with the pathological descriptions, as essential to be known by the surgeon. The information recently added by Drs Hodgkin and Carsewell will be useful in contributing, when certain doubtful points are ascertained, to the formation of a more perfect method of arrangement. But it will require a much larger proportion of knowledge on the history of the origin, cause, and ultimate terminations of morbid growths, combined with that of their anatomical structure, than has been hitherto given, before any thing like an arrangement equally useful to the nosologist, and the surgical practitioner can be constructed. It is not impossible that this may be a degree of perfection of which the subject is itself not susceptible, since what is gained for the one purpose may be lost for the other. In the meantime, the principal object of the surgeon is to know the characters of tumours in such a manner as to guide him in his therapeutic measures; and this it has been the great object of Dr Warren to accomplish.

The plan adopted by Dr Warren as most convenient and most suitable for practical purposes, is that regulated by the differences of the different textures of which the body consists. Dr Warren does not attempt to conceal the objections to which this method is liable; and he adverts to two very obvious ones, namely, that it is often difficult to ascertain in which texture any given tumour originates, and that necessarily the arrangement refers to the same general head without distinction, malignant tumours, and those free from this character. A third objection, perhaps more formidable than either, is the fact, that many tumours consist of morbid products which affect several tissues indiscriminately, and sometimes simultaneously in the same subject, such, for instance, as the medullary sarcoma or *fungus haematodes*, which has been known hitherto, in general, to affect not only several different tissues, but several different organs at the same time. But if the truth must be told, it is requisite to say, that our knowledge of these structures is still so imperfect, that it does not enable us to construct a perfect classification, and perhaps it will be long before we can have one with even few defects or inconsistencies.

In pursuance of the plan now mentioned, Dr Warren arranges tumours in the following order. I. Epidermoid Tumours, as the wart, the corn, and the *ichthyosis cornea;* II. Dermoid Tumours, embracing the Keloides, the Lepoides, and Eiloides; III. Tumours of the Cellular Tissue, viz. *Steatoma* and *Neuroma;* IV. Muscular Tumours, including muscular melanosis, muscular scirrhus, muscular medullary sarcoma, and fibrous tumours; V. Periosteal Tumours; VI. Osseous or Bony Tumours, embracing periosteal exostoses and medullary exostoses with osteosarcoma; VII. Glandular Tumours, embracing those seated, 1. in the lymphatic glands, 2. those in the secreting glands, 3. those of the mucous glands, 4. and those of the sebaceous glands;

VIII. Tumours of the Vascular Tissue, including erectile, arterial, and venous tumours; IX. Tumours of the Membranous Tissues, embracing those of the mucous, serous, synovial, and fibrous membranes; X. Tumours of the Eye; XI. Encysted Tumours; XII. Abdominal Tumours; and XIII. and lastly, Anomalous Tumours.

In treating of the several kinds of tumours belonging to these heads, Dr Warren illustrates the nature and prominent characters of each, as well as the treatment required, by suitable cases —often with coloured representations. We do not propose to follow him closely in the course of giving a sketch of his labours; but we shall select a few of the leading topics as the subject of remark and observation, and notice those principally in which Dr Warren has communicated new or interesting matter.

Among the three forms of cutaneous or dermoid tumours, the Lepoides, or rough crust-like degeneration of the outer surface of the *cutis vera*, or corion, is the one which illustrates, perhaps more readily than any other, the influence of accidental or external causes in the production of cancerous ulceration. Though this state may continue long unchanged, yet from injury or accidental irritation, it is liable to become chronically indurated, to inflame, and finally to pass into incurable ulceration. It advances in general gradually without much pain, and does not contaminate the adjacent parts.

The proper practice Dr Warren conceives to be extirpation; or if the patient dread the cold iron, destruction of the affected portion of skin by means of any of the chemical caustics.

Under the head of Keloides, a name of which we gave some account in our notice of the work of Mr Green, we find three forms of disease mentioned; 1. a white permanent elevation of the skin; 2. the spider-like pimple of the face; and 3. the keloides of M. Alibert.

The first of these morbid changes has been seen by several observers; and some account of it in a surgical point of view will be found in the 19th volume of the Medico-Chirurgical Transactions by Mr Cæsar Hawkins. (Ed. Med. and Surg. Journal, Vol. xlv. p. 222.)

It consists in soft or firm, velvet-like elevation of the skin, similar in appearance to the cicatrix of a burn, but different from it, in the circumstance of showing a disposition to spread and involve a larger extent of skin;—not always painful, or even sensible, and in general without discoloration. It may appear upon any part of the person. Dr Warren relates a case in which it appeared on the scapular region.

The second variety of dermoid tumour is that in which it assumes the appearance of a small red pimple, with slender processes, extending in a radiating direction from it, sometimes to the length of half an inch. This may long remain indolent and inert, especially in good constitutions, and in young subjects. But in advanced life, and in those who live freely and take much wine, it is liable to become painful, to inflame, and finally to pass into disorganizing ulceration.

The *keloides* of M. Alibert is a disorder of a more troublesome and dangerous character. Though like the first it bears a general resemblance to the scar left by a burn, yet unlike that it is redder than the surrounding skin, and emits red vascular processes, giving it a disposition like the claws of the crab; it is more sensible, and sometimes is the seat of a burning pain; and it presents a remarkable disposition after removal to regenerate itself, and to involve the neighbouring skin. Dr Warren relates a curious case of this kind, in which the affected portion of skin was removed a first and a second time, and after the second extirpation, the disease showed itself not only in the cicatrix of the original tumour, but in each of the six wounds made by the needle in effecting reunion, so as to form seven tumours instead of one. (See Plate 3.) Upon dissection the structure of the *Keloides* presents a white fibrinous appearance, similar to that of the scirrho-cancerous deposit of the female breast.

The third form of cutaneous tumour Dr Warren designates the *Eiloides* or Coiled-like tumour, from the Greek verb Ειλεω or Ειλω *volvo*, because it appears to consist of a long cylindrical band coiled up or rolled within itself. It is a rare disease, and the author has seen only one example in the neck of a negro-girl, and of which he gives a good representation in his fourth plate. He regards it as a genuine production of the skin, and restricting itself during its growth to this tissue, however large it may become. It appears first as an elevation of the skin, similar to that succeeding the scar of a burn; and afterwards it increases to a great size without pain, redness, heat, or ulceration, yet finally affects the patient's health. If removed it is easily reproduced. In the instance recorded by Dr Warren, after a first extirpation of the affected portion of skin by himself, the disease recurred in the course of about eighteen months, when the patient was desirous to submit to a second operation. This Dr Warren declined, but it was undertaken by another practitioner. Soon after the tumour was reproduced and grew rapidly, with complete failure of the health of the patient, who became dropsical and died. This fact shows very distinctly the tendency in the skin, native or acquired, to form this morbid change. Of the anatomical structure of this species of tumour, no account is given.

Besides the tumour now mentioned, Dr Warren refers to the same head, the *Molluscum* of Dr Willan, and general thickening of any particular portion of the skin.

Passing over the tumours of the cellular membrane, to which is referred steatom, which is properly an encysted tumour, and therefore might have been rather placed in the eleventh family; we shall merely advert shortly to those referred to the head of muscular tumours.

These are muscular melanosis, muscular scirrhus, and muscular *fungus hæmatodes*. The first the author seems to distinguish into common melanosis and malignant melanosis; and, from the account of the example of the latter form of the disease, the tumour seems to have consisted of melanotic matter combined with scirrhous structure, and proceeding to malignant or disorganizing ulceration. In speaking of muscular *fungus hæmatodes*, Dr Warren admits the difficulty of determining whether the morbid growth or production originated in the muscular tissue, or is confined to it; but he maintains that, when the disease takes place in the limbs or in the trunk, the muscular tissue is extensively affected by its ravages. But it matters little whether the encephaloid growth commences in the muscular tissue or not. It very generally, if not invariably, he admits, involves several tissues; and this it seems to do by its power of absorbing them, and substituting its own growth in their stead. Dr Warren informs his reader, that the first case of *fungus hæmatodes* which he saw was in 1805, when the nature of the disease was only imperfectly known; and in this case the soft, compressible, fluctuating, but irregular swelling, characteristic of its presence, appeared a little above the middle of the inside of the thigh. A puncture made at the softest part discharged blood copiously, but no purulent matter; and while it continued to bleed from time to time, an exuberant dark-red coloured fungus, three or four inches in diameter, and an inch above the skin, at length arose from it; and as this seemed to demand extirpation, Dr Warren operated; and when the disease recurred, attempted its eradication by caustic. This, however, proved ineffectual; and as amputation was then advised as the best resource, the patient refused, and placing himself in the hands of an empiric, speedily arrived at the termination of his career.

One reason which leads us to think that this disease, though it may originate in several textures of the same body, yet when it appears to affect the muscular, begins either in the cellular tissue or in the *fasciae*, is, that in a very well marked case in which we saw the disease in the leg, and in which we assisted at the operation of amputation for the removal of the diseased parts, —we found on dissection the most perfect specimen of the encephaloid production deposited between the superficial and deep-seated muscles of the leg.

Dr Warren is rather favourable to the plan of attempting the removal of this disease in its early stage by amputation, and thinks, that, if the operation be then performed so as to remove every part of the morbid product, it may be cured without chance of recurrence. This is one of the points which perhaps are still not positively determined as to the pathology of this disease. But we must say, nevertheless, that the experience of surgeons in this country is rather against the expediency of amputation in *fungus hæmatodes;* and, though a case may occasionally occur, in which, after amputation of an affected limb, the disease has not again shewn itself, either in the stump, the glands, or in any of the internal organs, this must be regarded rather as an escape than as a cure; and the number of such cases is so small that no rule can be deduced from them.

Under the same head, Dr Warren adverts to the tumours of the tendons, and the tendinous aponeuroses. Though the low sensibility of this tissue makes it much less liable to give rise to the formation of tumours, yet these may ensue upon excessive efforts of the muscles with which the tendons are connected, and, more rarely, after rheumatic and syphilitic disorders. In illustration of the effects of these tumours, and also of the influence of treatment, Dr Warren details a very interesting case, in which confinement and a methodical system of treatment pursued for eighteen months was succeeded by complete disappearance of the tumours, and restoration of the functions of the limb. The treatment consisted of perfect rest and quiescence of the limb, the frequent application of leeches, *i. e.* at the rate of every fifth day for the first six weeks; occasional purgative medicine; restrained diet without animal food,—enduring for five months; then a little animal food, with wine and sulphate of quinine; afterwards the restrained diet, with occasionally a little animal food, and *enemata* instead of purgative medicine; then stimulating frictions, with bathing the limbs twice daily in hot water and soap; and, lastly, bandaging applied to the whole limb, and exercise very gradually attempted. This case shows the effects of perseverance in a systematic and methodical course of treatment; and Dr Warren very justly observes, that, by the firmness and power of endurance evinced by the patient himself, he had saved himself from being a cripple for life.

Under the negative title of *Fungus non hæmatodes*, the author mentions in this section a rare tumour occurring in the same tissue, white, soft in consistence, variable in extent, seated usually deep among the tendons and muscles, not painful at first, and afterwards only so by compressing the surrounding organs; fungoid in structure, and friable and frangible, and of characters malignant, in this respect, that it returns after extirpation, and finally proves fatal. As it is chiefly in the absence of the circumstance of bleeding that this tumour is distinguished from the other forms of the encephaloid disease, there can be little doubt that it is a mere variety of the latter. In the case mentioned as the example from which the author derived his denomination, and which had not terminated fatally at the time at which the case was printed, that is, about the close of 1836, Dr Warren did not regard the bone or periosteum as affected, but he thought, from its texture and situation, that it must have originated either from the common cellular texture, or from the fibrous.

In speaking of periosteal tumours, Dr Warren draws a distinction between the thickening of the periosteum, which ensues on external violence, rheumatism, and the operation of *lues venerea*, and the thickening which constitutes periosteal tumour; and though he does not distinctly specify the diagnostic marks, we are led to infer that the former are temporary, and the latter permanent. The difficulty of in all cases establishing this distinction, nevertheless, appears in the fact, that he allows that in certain cases of necrosis the periosteum assumes an extraordinary growth, and appears in the form of a tumour, "the true character of which is not always easy of detection." As *necrosis* is decidedly the effect of inflammatory action, and accompanied with more or less of this action, as shown by the extreme sensibility of the periosteum in this condition, it seems doubtful to what extent it is practicable, or consistent with the facts to distinguish, unless in degree, the thickening of chronic inflammation, as is that in rheumatism and *lues venerea*, from the thickening of the periosteal tumour. The only circumstances of difference seem to consist in the less degree of pain, the greater permanency of the tumour, and its affecting the substance of the periosteum more generally, more completely, and more extensively. Is there any difference in the matter deposited on which the thickening depends? On this question Dr Warren gives no information.

In treating of the next order, viz. that of osseous or bony tumours, Dr Warren adopts the distinction made by Sir Astley Cooper, of exostosis into periosteal and medullary, and to these he adds the *osteo-sarcoma* of surgeons, or the osteo-medullary tumour of Mr Travers. In treating of the former, Dr Warren principally illustrates the conclusions already established among surgeons by the detail of appropriate cases. In treating of the latter, he makes in his descriptive account, several instructive observations, which deserve to be attentively studied by the surgical pathologist. Some of these we subjoin.

"A characteristic symptom of osteo-sarcoma is a tuberculated surface. The inequalities which cause this appearance are not produced by an intervention of plates of bony and cartilaginous substance. They are the masses of the unequally thickened periosteum, which form the covering of the tumour. In osteo-sarcoma I have never seen bony plates excepting at the points where the tumour is connected with the bone. If, for example, the bone be cylindrical, bony fragments may be noticed at those parts where the extremities of the bone enter the tumour. At other points I have not seen them.

"Osteo-sarcoma is generally believed to arise from the reticulated texture of bone; and certainly the disappearance in many instances of a part of the affected bone, the occasional enlargement of its extremities, where it enters the tumour, and the supposed existence of bony plates in the parietes, would seem to authorize this opinion. There is, however, reason to believe that such is not the fact.

"In all the instances of osteo-sarcoma, which have occurred in my experience, and these of course are few in number, compared with those which happen to experienced surgeons in Europe, this tumour has appeared to have its origin in the periosteum, and not in the bone. The constituents of the tumour are three. 1. The bone on which the tumour is placed; 2. The periosteum; and 3. The medullary fungus contained in the periosteum. To these we must add a fluid of varying consistence, found in cells, in the interior of the periosteal cavity.

"First, the bone in most of these cases appears as if a part of it had been broken out, and the fractured ends are enlarged, or else the thickened peroisteum gives them the appearance of enlargement. But this appearance is not universal. You may see in the case of Corey, the third case mentioned, that the rib from which the tumour originated was entire. Its surface only, showed the origin of the tumour. Consequently, the tumour in this case must have had its origin in the surface; and this fact cannot be considered as a mere exception to a general law; it breaks up such a law; for if a true osteo-medullary tumour can be traced to a periosteal origin in one instance, we may believe it to have such an origin in others, unless the contrary is proved. Second, the periosteum in these tumours exhibits an extraordinary activity of growth. It is quite vascular, and forming the surface of the tumour is thickened in some parts to the extent of half an inch, and forms the protuberances characteristic of the tumour, as you may verify in this tumour of the clavicle and that of the rib. Third, the fungoid formation which constitutes the mass of the tumour, appears, so far as we are able to discover, to arise from the periosteum nearest the bone, whence it shoots in a pedunculated or arborescent form into the large periosteal cavity. So much for this short survey of the anatomical structure. Let us now ask how far the history of the cases to be mentioned may support this.

"In the first and second cases, the disease was brought on by a blow. Cook received a violent blow on the left side of the lower jaw; and a tumour appeared in the part where the blow was received. Let me ask whether such an external violence is most likely to produce inflammation of the periosteum, or of the reticulated texture of the jaw? Certainly the former. In the same case the bone was enlarged; that is, the periosteum was thickened quite beyond the tumour, over the condyloid process.

"The case of Smith is more strikingly in favour of this opinion. This man, while lifting a heavy piece of timber, felt a very severe pain about his collar bone; a pain and tumour appeared directly, and never left him. We cannot believe that the application of violence, in such a mode, could operate on the cancelli of the interior of the bone, unless it factured it. But it is easy to conceive that the action of the pectoral muscle might have injured the periosteum, and produced the phenomenon mentioned, namely, the giving way of something in the part, the pain, and the tumour which followed.

"In Corey's case no violence was known to have been inflicted. But in him, the substance of the rib, not having been enlarged, nor absorbed, though the disease had run on for six years, it seems highly probable that the disease took its origin in the periosteum.

"Setting aside particular facts, and placing the subject on the ground of general reasoning, which is most probable, I would ask, whether such tumours as we speak of, should take their origin from the reticulated texture of bones as solid as the lower jaw, clavicle and rib; or from the periosteum, covering these bones? Evidently analogy is in favour of the latter.

"The mass of reticulated texture in the extremities of the long bones is very well adapted, from its vascularity, to become the seat of inflammation, and extraordinary growths. Hence we find the head of the *os humeri*, the lower extremity of the *os femoris*, and the upper extremity of the tibia to become the seats of enormous tumours, with real bone for their parietes. Cases of this kind have been mentioned under the head of medullary exostosis. To give you an opportunity of contrasting them with the cases mentioned below, I will state the following: In the summer of 1836, a gentleman came to consult me, from the British provinces, for a tumour of the knee. He was much out of health. He had a cough; was emaciated; the lymphatic glands in every part of the body and limbs were enlarged, to the number of more than a hundred. His knee presented a very hard irregular basket-like tumour, covered with distended veins. A considerable part of the surface was bone; but there were various soft spots scattered over it—I advised him to return home, as his disease must speedily prove fatal. This disease began with a uniform enlargement of the lower extremity of the *os femoris*, without external injury.

"From the facts and considerations stated above, it would seem that this is in truth a periosteo-medullary formation.

"Is this disease malignant? Fungoid diseases being generally disposed to affect the system, or to originate from constitutional causes, we should apprehend such a tendency in this. In some cases, however, the affection is so purely local that we cannot lay it down as a general law. In the first and third cases related here, there was not the least appearance of constitutional taint. In the second and fourth, we might suspect a diseased state of the system; but in neither of these does there appear to have been any important derangement, which might not result from the local cause. In reply to the question then, we should say, that when the patient's health is not disturbed; when there is no secondary local affection; and especially when the disease can be traced to an accidental violence, we may consider the constitution secure, and proceed accordingly. In any case where a secondary affection has not appeared, it seems right to give the patient a possibility of recovery, by extirpation of the tumour.

" When allowed to go through its course without interference from art, it terminates in a sloughing of the integuments, followed by an extensive foul sore, which would ultimately exhaust the patient, if he should not previously be destroyed by secondary affections in important organs. The lymphatic glands in the great cavities fall into a fungoid degeneration; the liver, spleen, kidnies, stomach, and lungs, in different cases, come under the morbid influence.

" How may this be distinguished from other tumours? From exostosis it may be known by wanting the hardness of the latter. From common periosteal tumour, by its greater size and more regular form. From scirrhus, situated on a bone, by being more closely connected with the bone. From medullary exostosis, in wanting the basket-like surface, caused by mixture of layers of bone and membrane. The history of its growth will aid in illustrating the distinctions: yet, after all, there are cases in which it is impossible to ascertain with certainty what its nature is."—Pp. 137—144.

After these remarks, which may be regarded as generally applicable to osteo-sarcoma, whatever be its situation, Dr Warren illustrates the particular history of the disease, and the operations adapted to each, by the detail of particular cases of *osteo-sarcoma* in different bones. Into these details it is out of the way of this account to enter; but we recommend their careful perusal to every one who wishes to comprehend the dangers and the difficulties to be encountered in the removal of bony tumours, and the means by which these dangers may be most easily obviated, and the difficulties completely surpassed.

Glandular Tumours, the next in succession, form a numerous, multiplied, and important tribe, which the author subdivides into four families, viz. tumours of the lymphatic glands, tumours of the secreting glands, tumours of the mucous follicles, and tumours of the sebaceous follicles.

1. The lymphatic glands he represents to be liable to three

forms of tumour,—a scrofulous enlargement, scirrhous enlargement, and fungoid enlargement.

a. The first of these is sufficiently well known. Dr Warren does not dwell on the process or nature of their enlargement, and adverts to them chiefly to deliver what we must regard as a well-founded and judicious caution regarding the employment of iodine. He informs us that after many years trial of the preparations of iodine in large and small doses, in hospital practice and privately, externally and internally,—in various forms of scrofulous disorder, he has rarely seen any very distinct advantages from it. Nor is this result, he remarks, inconsistent with what ought to be expected, considering the nature and origin of scrofulous tumours of the lymphatic glands. Scrofula is a constitutional, and commonly a hereditary disease, and if we are to find any remedy for such a distemper, it must be found in those agents which influence the intimate structure of the animal body, more generally and intimately than iodine or any medicinal substance can be expected to do. He refers to the physiological influence of suitable food, a pure atmosphere, exercise of the muscular system, suited to the constitution and powers of the patient, and a healthy state of the excretory system. The latter it is often the most difficult part of the indication to effect; for the healthy and vigorous state of the different secreting and excretory organs depend so much on a healthy state of the capillary circulation, and this again on the healthy state of the alimentary and respiratory function, that it requires the concurrent operation of many different circumstances to insure the due performance of this important order of functions. On this point we can only say that we altogether agree with Dr Warren, in thinking that the merits of iodine as an antistrumous specific have been very much overrated; and that the true and effectual method of arresting the progress and the ravages of glandular scrofula is to be found in the due regulation of the functions of digestion and nutrition, with the different secretions, and in the abatement and removal of local irritation.

The second kind of lymphatic glandular tumours, viz. the scirrhous, Dr Warren subdivides into two species, the *a.* nonmalignant, and *b.* the malignant.

a. By the first he understands that species of enlargement with more or less induration, which is liable to take place either in isolated lymphatic glands, or in several of them which are then aggregated in a cluster. "When dissected out, this kind of tumour is found to be covered with one or more coats formed by condensation of the surrounding cellular texture, and constituting a cyst. On cutting it open a white substance is seen near its central part, from which issue rays of the same matter to its exterior. Between these rays there is a pale reddish substance, something like the healthy appearance of the lymphatic glands."

It would be preferable here were the membranous covering to be denominated a capsule, as the term cyst is more properly limited to those envelopes which contain fluid or semifluid contents; generally inorganic secreted matter, while that of capsule is applicable to those growths more or less distinctly organized, which constitute the ordinary class of solid tumours. The tumour itself seems to consist of simple enlargement of the lymphatic gland or glands, with deposition of albuminous matter, the result of chronic inflammation; and the difference between it and malignant enlargements seems to consist in the absence of the peculiar organization and deposition which constitutes the scirrhous or malignant enlargement. It seems very often to belong to that kind of structure to which Mr Abernethy applies the name of vascular *sarcoma.*

The question with regard to the removal of these tumours or leaving them untouched, Dr Warren very properly determines by the circumstances of their position. They are not liable to proceed to malignant or destructive ulceration, and might, therefore, so far as that circumstance is concerned, be left alone. But if by their enlargement they are liable to press on important parts, as they may do when seated in the neck, their removal becomes requisite.

b. By malignant tumour in the lymphatic glands, Dr Warren tells us he understands a disease " in which destructive action overbalances restorative, and thus produces incurable disease. A malignant tumour is not necessarily attended with ulceration. It may be so or otherwise." He further admits two kinds of malignant tumour, the *scirrhous malignant* and the *fungoid.*

We think it is rather unfortunate that the author has allowed himself, in speaking regarding these products, to be betrayed into this inaccurate manner of thinking, which certainly undoes some of the most useful and clearly marked distinctions established of late years among these tumours. The grand and essential distinction, we conceive, between simple indurating enlargement, which should be expressly denominated *Scleroma,* or Vascular Sarcoma of the lymphatic glands, and scirrhus on the one side, and *fungus hæmatodes* on the other, consists in the absence of the peculiar deposit which constitutes the latter tumours, and consequently in the indisposition of the tumours to assume the self-destroying process. Now this self-destructive process is in scirrhus very peculiar. Though it is always attended with more or less of the vascular distension, and impeded circulation taking place in inflammation, and consequently may give rise to the usual products of inflammation, as suppuration, serous or sero-purulent effusion, and adhesion; it also presents a peculiar train of phenomena, several of which have been well described by Dr Carswell and others. The most characteristic is the incessant formation of new scirrhous matter in various parts of the tumour, with the feeble organization of this matter, and its inability to stand its own circulation. Hence these parts, by pressing on blood-vessels which nourish them, cause their own death by a species of involuntary and necessary suicide; and hence, in every scirrhous tumour we observe an incessant and alternate process of gangrene, and abortive reproduction, and morbid deposition, and gangrene. In the case of encephaloid cancer the tendency to the production of new matter is still more remarkable, and when the growth has burst the integuments, and formed a communication with the surface of the body, it constitutes the fungating growths.

Dr Warren inculcates the principle, which we believe has been admitted in this country ever since the publication of Mr Abernethy's treatise, that the lymphatic glands are as liable to be attacked by malignant degeneration, both scirrhous and encephaloid, as the secreting glands. Any of the usual situations of these glands may be affected,—the groin, the arm-pit, or the neck; but in each case there is often simultaneous and analogous affection of some of the internal glands,—whether continuous with the external or not. Thus when the glands of the neck or arm-pit are attacked with malignant degeneration, those of the chest are occasionally diseased in the same manner; and when the inguinal glands are distempered and enlarged, those of the pelvis and abdomen are very generally affected. The difficulty, the danger, and the impropriety of operation in such cases must be obvious. Dr Warren mentions cases of this kind in which the glandular tumour not only inclosed and affected blood-vessels and nerves, but encroached so far upon important internal organs as to place operation out of the question. He relates also an interesting but formidable case, in which he removed a tumour of this kind from the neck, seated so closely to the vessels and nerves that it was difficult to distinguish them, that the jugular vein was obliterated, the carotid artery diminished in size, and the pneumogastric nerve so closely mixed with it, that, though separated from, it was not wholly cleared of, the tumour, while the sublingual nerve required to be divided, and the pharynx was opened,—yet the patient recovered from the immediate effects of the operation. After an interval of some months, however, ulceration took place, and destroyed the patient about one year from the date of the operation.

Of the coolness and resource of Dr Warren in operation, the case now mentioned may be conceived to be a sufficiently satisfactory specimen. In another immediately following, these qualities were still more evident. Of this tumour he inferred, from its position and the other symptoms, the relations to be the following.

"Taking its origin in the lymphatic glands, behind the posterior edge of the sterno-mastoid muscle, it had extended backwards under the trapezius to the spine, and forwards under the mastoid to the pharynx. That it adhered to the splenius and complexus and trachelo-mastoideus, and involved the digastricus and all the styloid muscles. Of the blood-vessels, that it involved the external carotid artery, with its eight branches, excepting possibly the superior thyroid. Of the veins, the internal jugular, all the external jugulars, and the accompanying branches of the arteries. Of the nerves, the three or four superior cervical, the par-vagum, sublingual and its descending branch, the glosso-pharyngeal, laryngeal, and probably the gustatory, and great sympathetic. Of the glands, the parotid and submaxillary. Of the canals and passages, the larynx, pharynx, the auditory passage, and possibly the œsophagus."—Pp. 178–179.

The detail of the operation is the following.

"My wish was to have secured the carotid artery first; but perceiving the depth of this vessel from the rising of the hard tumour on the outside, and the trachea on the inner side, an incision was made from the spine to the angle of the jaw, to meet another incision from this last point downwards, in the direction of the anterior line of the sterno-mastoid muscle. The last incision extending down the neck near to the clavicle. The flap thus formed was elevated by a dissection, laborious from the close adhesion of the integuments to the tumour. This flap being turned down, exposed the posterior half of the tumour, a hard, knotted, bloody surface, extending from the spine near to the trachea, and showing the mastoid muscle firmly imbedded in the scirrhous substance.

"Next, having dissected the mastoid from its inferior adhesion to the scirrhus, the carotid artery was exposed and tied.

"The superior flap of integuments was then raised, and I attempted to disengage the mastoid muscle from the furrow it occupied in the tumour, in order to pursue the dissection under it. This was found impossible. The alternative then presented of cutting across this muscle and dividing with it the accessory nerve,—the consequence of which last I was unacquainted with,—or else dividing the tumour through its middle part, behind the mastoid. The latter course was adopted. The scirrhous mass was cloven in two. The posterior half was dissected out, and it then remained to separate and disengage the anterior part from the posterior face of the sterno-mastoid from the digastric, the nerves and bones; including the parotid and submaxillary glands. The mass of the umour was then happily removed from the parts just mentioned.

Some portions adhering to the fore part of the bodies of the vertebræ and to their transverse processes, could not be wholly dissected without exhausting the patient's strength.—The operation was therefore concluded by the application of the actual cautery to the last mentioned parts, with very little complaint from the patient.

"In the latter part of the operation, the patient was seized occasionally with a spasmodic cough, produced, apparently, by the division of some of the inferior branches of the accessory nerve. The internal jugular vein was buried in the tumour, and in order to raise the lower edge of the mass, it was necessary to divide and tie this vessel. To accomplish this with safety, it was compressed between the tumour and the clavicle, then divided and tied. A few bubbles of air entered the open mouth of this vessel, but were arrested by the finger below, and forced back again.

"The principal branches of the first and second cervical nerves were seen and divided. Others, running through the substance of the tumour, were also divided, as it appeared by the sensations of the patient, without being seen."—Pp. 180–182.

The operation was performed on the 7th of March 1837, and, after eight days of severe symptomatic fever, with some unfavourable symptoms, he was on the 15th pretty well, and had a desire for wine; and soon after, Dr Warren learnt that the patient was recovering. The final result is not mentioned. But it was a great matter for the patient to get over so easily the immediate effects of an operation affecting so many important organs.

The encephaloid degeneration, or the fungoid disease, as Dr Warren calls it, of the lymphatic glands, is distinguished by the softness of its tumour, its tendency to discoloration, its early influence on the constitution, and the extent to which it affects the lymphatic system. The author might have added, its tendency not only to spread to contiguous organs, but to affect several different tissues at the same time, or progressively. The general accuracy of this fact may be regarded as established, not only by the united experience of surgeons in this country, but by the cases recorded in the present work. The author, nevertheless, thinks that, although operation is generally inexpedient and improper, there may occur cases in which "an operation may sometimes be proper." Under these circumstances, the author properly recommends that the patient must be made to understand the nature of his case, and called on to decide for himself. He admits, however, that when there are distinct abdominal tumours, it is trifling with the patient, and abusing the influence of the practitioner, to propose, or even allow, the performance of a painful and useless operation. It is needless to say that no patient can be regarded as capable of deciding in such circumstances for himself; and the great use of the conscientious and judicious surgeon is to decide for him, and not allow himself or any of his brethren to be made the mere instruments of an irrational and absurd system of incisions;—for operation it cannot be denominated. In every case the rule must be, where there are evident proofs of affection of any of the thoracic, abdominal, or pelvic glands or viscera, whether the tumour present the external characters of scirrhus or encephaloma, the idea of operation should never be entertained.

2. The consideration of the tumours of the secreting glands, which next succeeds, occupies a large portion of the author's attention.

In the first subdivision on the diseases of the female breast, Dr Warren treats, much after the manner of Sir Astley Cooper, *first*, of the non-malignant including 1. hydatid disease of the breast; 2. the chronic mammary tumour; 3. the cartilaginous and osseous tumour; 4. the adipose tumour; 5. the large pendulous breast; 6. the scrofulous swelling; and 7. the irritable breast; and *secondly*, of the malignant tumours of the breast, comprehending encephaloma and scirrhus. In treating of the latter subject, the author refers chiefly to the excellent paper of Mr Travers, in the 15th volume of the London Medico-Chirurgical Transactions, of which we gave some account in Vol. xlvi. p. 466, to the essay of Dr Hodgkin on the minute structure of several of the scirrhous tumours, and to the opinions of Mr Carmichael on the entozoal or animal origin of cancerous deposition.

From the result of his observations, Dr Warren is disposed to believe in the constitutional origin and comprehensive character of scirrhous deposition; and the deaths after operation he ascribes partly to the occurrence of erysipelatous inflammation of the internal organs, and in a smaller degree to the influence of sympathetic irritation. In this ambiguity, it may become a reasonable question, whether the inflammation called erysipelatous in the internal organs, without external erythema, was not one of the effects and indications of the sympathetic irritation, or rather the violence of the symptomatic fever?

The most important point, however, in the subsection on this subject, is the circumstance of the fatal introduction of air into the vascular system through the subscapular vein, in a case of amputation of the breast in a married woman of thirty-three. As the account, though extremely interesting, would occupy a disproportionate space of the present article, we shall give the leading particulars in the medical intelligence.

In the further prosecution of the subject, Dr Warren arrives at the consideration of the arguments in favour of and against the removal of scirrhous or cancerous tumour. It is well known that upon this point much doubt has been entertained by many surgeons; and as years roll on, and the results of operations on breasts truly known to be scirrhous, are accurately recorded, the objections against the propriety of operation seem to increase in number and force. In the cases given by Dr Warren, there were traces of disease in the internal organs so extensive that he infers, that these, and not the disease of the external organ, were the principal points deserving the attention of the surgeon. "In some instances where the breast had been removed, there were in fact no remains of external disease; while of the internal organs scarcely one seemed to have escaped its ravages."

From this he is led to inquire into the question of the transmission of morbid influence from the breast to other parts; and he thinks there may be two modes of transmission, one by the lymphatics, the other by nervous sympathy. As, however, it is doubtful whether transmission really takes place, and as it seems equally probable that the breast and the internal organs are affected simultaneously or successively from the influence of the same general cause, it is unnecessary to spend time on this question. Our readers who wish to see the arguments favourable to either side will find them stated by Dr Warren.

The author, notwithstanding the practical inference which necessarily flows from this fact, which is not so striking or unexpected as he seems to think, and which would lead to the establishment of a rule to operate very rarely if ever, in cases of scirrhus or carcinoma of the breast, is favourable, nevertheless, to the performance of the operation; is satisfied by experience that many cases may be cured by it; and is disposed, from information which he thinks good, to say, that one case in three has been cured without relapse. His final conclusion is stated in the following terms. "When, therefore, the tumour is not large, has not been of long standing, is not ulcerated, and there are no signs of constitutional affection, it is best to try an experiment, which, notwithstanding its painfulness, is generally desirable and satisfactory to the patient."

It then becomes an important question to distinguish among the multiplicity of tumours, liable to affect the female breast, those which require removal from those which may be safely left untouched, and those for which it is well fitted from those to which it is improper. This leads the author to give a short diagnostic sketch of the leading characters, by which each sort of tumour is peculiarly distinguished. As these deserve to be well known, we subjoin them.

"1. Scrofulous tumour. This occurs in early life, usually before the age of twenty-four. It is connected with constitutional appearances of scrofula. The tumour is large, irregular, indistinct, not painful, varies in size, at different times increasing and then diminishing.

"2. Chronic mammary tumour. This occurs before the age of thirty-five. It is seen in healthy and in feeble constitutions. The tumour is circumscribed, of a rounded form, quite moveable, not tender nor painful, increases slowly, and remains stationary for a long time. It is not malignant.

"3. Irritable mammary tumour. This occurs before the middle age, in delicate and irritable habits. The tumour is not large, not well defined, is tender, painful, sometimes accompanied with general swelling of the breast and fever, which subside and leave the original tumour. This is not malignant.

"4. Hydatidal tumour. This commonly appears before the middle age. It is with difficulty distinguished in its early stage from the scrofulous and from the scirrhous tumour. It is harder than the former, and not so hard as the latter. The tumour is irregular, occupies the whole breast, is not tender, painful, nor discoloured: increases rapidly, and finally attains a great size. In this last condition it is readily distinguished by the globular bodies which form its surface; as well as by its magnitude and freedom from pain.

"5. Adipose tumour. This occurs in fleshy and healthy females. Its great size, elasticity, freedom from sharp pain, and regular surface, well distinguish it from the hydatidal and scirrhous breast.

"6. Cartilaginous and osseous. These are rare, and are known by their extreme hardness.

"7. Scirrho-cancer. The period of life at which this occurs is most commonly between the ages of forty and fifty. Frequently some of the relatives of the affected person are cancerous. The tumour is at first of a small size, increasing with variable rapidity, is found more frequently in the axillary part of the breast, is very hard, moveable at first, afterwards less so, is accompanied with lancinating pains, sometimes but not always severe, increases gradually, contracts adhesions with the skin, produces distortion and drawing in of the nipple, ultimately causes a redness of the skin, followed by ulceration and discharge of a fœtid matter; the edges of the ulcer turn out, bleedings occur, sometimes profuse, from the ulceration of vessels. It is accompanied with enlargements of the axillary glands, swelling of the arm, difficulty of breathing, cough, abdominal pains, dropsy of the abdomen and thorax, and fragility of the bones. The patient dies, not from the cancer in the breast, but from disease of internal organs.

"8. Fungus hæmatodes, medullary cancer. This is rare. It occurs in young subjects. The tumour is large, soft, consists of two or more globular bodies, increases rapidly, causes ulceration of the skin and an external fungus, which bleeds from the whole surface. The constitution soon becomes affected, and most of the functions disordered. The bleedings are severe and dangerous, but the patient generally dies of internal disease."—Pp. 279–282.

Under the succeeding head of tumours of the salivary glands is related an interesting case of tumour of the parotid, in which the author cut through or rather cut off the external carotid artery, and removed the body of the parotid gland, a parotid fistula was formed, and the face remained paralytic, in consequence of the division of the seventh pair. Yet the parotid fistula, after continuing for two years, was completely healed under the use of the nitrate of silver, and the paralysis of the half of the face gradually diminished after two or three years, and at length disappeared, without leaving any trace of its existence, so that the lady, who was a widow at the date of the operation, entered into a second matrimonial engagement.

In speaking of tumours of the submaxillary glands, he mentions an amusing instance of cure, by a remedy suggested in the days of superstitious ignorance, and the effect of which must, for lack of a more obvious cause, be referred probably to the influence of imagination.

Some time back, a female presented herself to Dr Warren, with a tumour of the submaxillary gland, which had become troublesome and alarming.

It was at this time, after two years' duration, as large as an egg, and was so hard, that Dr Warren considered any proposition to dissipate it by medical treatment as chimerical, and accordingly he recommended immediate removal by operation. To this the patient would not consent; and in applications of considerable activity, which were directed to be used, she persevered for several weeks with great diligence, but without witnessing any change in the size of the swelling. After this, she, with some hesitation, begged to know from Dr Warren whether the application of a remedy recommended to her, viz. the hand of a dead man, three times repeated, to the diseased part, would be perfectly safe. As one of her neighbours then lay dead, an opportunity was afforded, if the remedy were free from danger. At first Dr Warren was disposed to dissuade her from the proceeding; but remembering the power of the imagination, he assured her that she might make the trial without the apprehension of bad consequences. Some time after this, she presented herself once more, and stated with some appearance of satisfaction, that she had used this application, and no other; and, upon examining the tumour, the Doctor found it had disappeared.

It is impossible to deny that the application of the dead man's hand was followed in this case by dispersion of the tumour, and consequently, that the measure was entitled in this particular case to the character of a remedy. It was, however, only an accidental remedy; and it is not an agent of that kind, on the operation of which the physician or surgeon can place any reliance in the expected removal of tumours of any kind.

The enlargement of the thyroid gland is distinguished by the author, after the practice of others, into the common enlargement, named goitre or bronchocele, and the permanent enlargement, with change of structure named *scirrhus*.

The first, it appears, is common on the banks of the large rivers, as the Ohio and the Mississippi, and not unfrequent in the mountains of Vermont in Virginia. In some instances, persons coming from these inland districts to the sea-coast get rid of the tumour entirely; but in the majority of cases treatment is requisite; and in this, though Dr Warren denies not the influence of water, he justly reposes more confidence in the use of local depletion, by means of leeches and the practice of sea-bathing.

In the removal of the scirrhous thyroid tumour, as the arteries are divided so near the carotid artery that the current of blood in the latter prevents the formation of coagula in the thyroid vessel or vessels, and consequent adhesion, Dr Warren recommends that in every instance the carotid trunk of one side be tied. When both lobes are diseased, as it would be unsafe, he thinks, to tie both carotids at once, he recommends two separate operations on that vessel and the extirpation of the tumour. Of the first variety of operation he gives in the present work a good example, in which, though the tumour adhered firmly to the windpipe, and also to the œsophagus, requiring detachment by the knife, yet the operation was successfully completed; and though the patient had in the afternoon a sense of sinking at the epigastrium, and the following day a pain at the same part enduring for forty-eight hours, and on the fifth day a rigor, with pain at the stomach and fever, in consequence of rising to the floor with uncovered feet, yet she eventually recovered. Dr Warren is disposed to ascribe the sinking at the epigastrium and subsequent pain to the change in the course of the circulation. Is it not as likely that it arose from the slight injury inflicted on the œsophagus by the separation of the adhesion?

The double ligature of the carotid, with the subsequent removal of the thyroid gland, was successfully accomplished a few years ago by Dr Mussey.

The history of the tumours of the testicle, though ably given, presents nothing which we can with propriety particularly notice. It is well known that true scirrhus of that organ is much less frequent than is commonly imagined.

3. In the account of the tumours of the mucous glands are considered cancer of the lip, tumours, and cancer of the tongue, tumours of the palate and pharynx, tumours and induration of the tonsils, scirrhus of the glands of the stomach and intestines, and tumours of the vagina, uterus, and bladder.

For induration and enlargement of the tonsils, and also for simple enlargement from inflammation, Dr Warren extirpates or amputates rather these organs, by means of a convex knife, striking in a grooved ring of a diameter proportioned to the size of the tumour; and it is a great recommendation of this instrument, that it performs its work without risk of hemorrhage, which has been the great evil in operations on these glands by cutting tools. The instrument being introduced into the mouth it compresses or rather depresses the tongue; the ring is carried over the tonsil; and the knife being pushed down cuts it off. The whole tonsil, however, is not removed in this operation, as this is neither practicable nor necessary. It is wise to have at hand the means of applying the actual cautery, should the hemorrhage require it.

The section on erectile tumours contains much interesting matter. Aneurism by anastomosis the author distinguishes into accidental and congenital, understanding by the former, anastomotic aneurism, not the result of accident, but supervening spontaneously. Perhaps it might, with less chance of misleading, have been denominated *acquired*. Of this form he gives an interesting example occurring in the internal angle of the right eye of a young woman of eighteen, at the anastomosis of the facial, ophthalmic, and frontal arteries, where it formed a pulsating tumour as large as a hazel-nut, and in which at first the anastomosing branch of the ophthalmic artery, was enclosed in a ligature, on the 11th October 1829, and after division of the facial artery with evacuation of the tumour a compress was applied to include the artery and sac. On division of the facial artery the pulsation ceased, and the patient was delivered from the uneasy feelings, and she consequently left the hospital, though the pulsation had slightly returned after the third day. In the course of two weeks she returned with the tumour pulsating as before, the upper part of the face red and swelled, the carotids throbbing violently, especially on the right side, and the patient complaining of sensations that her head was flying off. After trying the effect of some general remedies with low diet for two months without benefit, Dr Warren enclosed the right carotid artery in a ligature on the 2d January 1830. The pulsations of the right side were immediately relieved. Those of the left continued for a little, and slowly subsided; and the cure was complete and permanent.

This case suggests two considerations.

1. It is important, as Dr Warren remarks, to observe, that in this case considerable perplexity was caused by the pulsations being almost as forcible, urgent, and distressing on the left side

of the head as on the right, so that it was impossible to say before the experiment, whether the ligature of the right carotid alone would have been followed by their subsidence, or the left might not also have required to be inclosed in a ligature. The result, he thinks, proves that the pulsations were sympathetic.

2. It is remarkable that in this case the interruption of the current through the small arteries was not sufficient to suspend the pulsations in the tumour, or check its growth, and this was only effected by the interruption of the current in the large trunk. Dr Warren does not think that from this we are entitled to conclude that in every case of anastomotic aneurism it is requisite to tie the arterial trunk, from which the nutrient arteries of the tumour proceed; and as it might be inferred that this operation might in some cases be performed without the expected result ensuing, the author mentions a case in which he actually enclosed the carotid in a ligature, without thereby curing the disease.

The reason of this difference seems to be, that in certain cases it is requisite to perform both operations, both to secure the vessels immediately entering the tumour, and also the large trunk from which they issue. The first measure is rendered requisite by the free anastomosis of the small vessels of the head and face; and the second by the necessity of protecting the tumour and its nutrient arteries from the constant impulse of the heart, and the influx of blood, until adhesion be accomplished.

The congenital aneurism by anastomosis, the erectile *nævus*, or the erectile and sometimes pulsating tumour, which supervenes on *nævus maternus*, Dr Warren cures either by excision, by needle with the double ligature, by twisted ligature, or the introduction of the red hot needles. The object in each case is to produce adhesive inflammation. For details we must refer our readers to the volume itself.

Next to the tumours of the vascular system, the author enters on the consideration of those of the membranous textures; and under this head includes tumours of the mucous, serous, synovial, and fibrous membranes. Though this subject is important, we think it unnecessary to follow the author in his pathological and operative details, as we conceive it would be impossible to communicate a useful sketch of his labours in this department without referring the reader to the study of the section itself.

Neither the account of the tumours of the eye nor that of encysted tumours, though both contain useful information, are sufficiently peculiar to justify our occupying the time of our readers with any formal account of them. On the subject of abdominal tumours, we have only to say, that they are placed beyond the bounds of rational operative surgery.

The foregoing account will communicate some idea of what readers may expect in the present volume. Its most serious defect is, in our estimation, the mode of arrangement, which the author himself admits to be liable to several objections, and we could mention others which have occurred to us in the course of perusal. Even in some parts we are not sure that the author has not unnecessarily confused his classification, for example in placing cancer of the lip and cancerous tumours of the tongue among the first of the tumours of the mucous glands. Is not cancer of the lip either an instance of cutaneous cancer, or at least cancer of the modified mucous membrane forming the *prolabium?* As to cancer of the tongue it is often difficult to say in which tissue, whether in the mucous covering, or in some of the follicles, it originates. The tumours of the nerves might more conveniently have been made a separate head, than stationed at the close of the tumours of the vascular system, among which they do not very naturally place themselves.

We will not forget, however, that the subject is complicated, intricate, and as yet but imperfectly known; that the nosology and surgery of tumours are variable and unsettled; that these growths are much less amenable to rule and method than any other department of surgery, each kind of tumour almost requiring new distinctions and modification in operative details; and that it is neither fair nor grateful to Dr Warren, who has here given the profession the valuable results of nearly thirty years' experience, to dwell on errors which are in several respects inseparable from the subject. We think it more a becoming feeling, to express thankfulness that Dr Warren has, amid the toils of practising and teaching his profession, left as it is, a memorial of those useful and instructive points, pathological and practical, of which he has enjoyed the means of acquiring the knowledge. The present work possesses substantial merit, which cannot fail to recommend it to the serious and attentive study of all those who are best acquainted with the practical difficulties of this most difficult, variable, and unsettled department of surgery. The history of the different operations given by Dr Warren is alone sufficient to stamp a high value on the work; and when the surgeon who has similar cases to treat, and tumours equally difficult to remove, learns from Dr Warren the difficulties against which he had to contend, and the manner in which he encountered and overcame them, he will feel that he has derived from the instructions of that author much more beneficial aid and information than any that could be conveyed by mere attention to methodical arrangement.

ART. V.—*What Asylums are, were, and ought to be; being the substance of Five Lectures delivered before the Managers of the Montrose Royal Lunatic Asylum.* By W. A. F. BROWNE, Surgeon, Medical Superintendent of the Montrose Asylum, formerly President of the Royal Medical Society, Edinburgh. Post 8vo. Edinburgh, 1837, pp. xii. and 240.

THIS little work is interesting both on account of the statistical information which it contains in a condensed form, and the enlightened philanthropic views which it advocates. The first chapter is devoted to the consideration of the question, What is Insanity? The author defines it to be "inordinate, irregular or impaired action of the mind, of the instincts, intellectual or perceptive powers, depending upon and produced by an organic change in the brain; the extent of the disease corresponding to the extent of the destruction or injury of the nervous structure." He conceives that in every case the disease is marked by an organic change, more or less extensive in the brain, and that where no such alterations have been observed after death, they have either been of an evanescent nature, and disappear on the extinction of life, or have been overlooked in consequence of the negligence or ignorance of the inspector.

The definition now given cannot be considered to be superior to many previously promulgated, and indeed Mr Browne himself, in the course of the next few pages, deprecates any attempt to define the disease, declaring it to be tantamount to endeavouring "to discover one form of words expressive of a hundred different things." On this view he has also acted, and in the course of the work has contented himself with describing the various forms which insanity assumes, "believing that by such a course the interests of science and humanity will be better served, than by straining after what the failure of all previous writers nearly proves to be a nonentity."

After giving Arnold's and Heinroth's classification of the forms of insanity, Mr Browne proposes to divide it into, 1*st*, Idiocy, or the non-developement of the faculties; 2*d*, Fatuity, or the obliteration of the faculties; 3*d*, Monomania, or the derangement of one or more of the faculties, and 4*th*, Mania, or the derangement of all the faculties. Of idiocy he admits of four gradations; 1*st*, with non-developement of all the powers; 2*d*, with developement of the external senses; 3*d*, with the developement of a propensity or affection; 4*th*, with developement of an intellectual power. He subdivides fatuity into partial and complete monomania, according to the faculty or faculties deranged, and mania into that marked by an increase, and that by a decrease of activity. Of each of these he gives graphic descriptions, interspersed with acute remarks and interesting illustrations.

The second lecture is devoted to the statistics of insanity, and on this subject the author has collected within a small compass a mass of facts and deductions, which do honour to his industry and talents. To give any abstract of this portion would be impossible. As a specimen, however, of the style of the work, we extract the following passage, in which Mr Browne repudiates the notion that insanity is an inseparable adjunct of civilization.

> "Is insanity an inseparable adjunct to civilization? I spurn the supposition. The truth seems to be, that the barbarian escapes the scourge because he is exempt from many of the physical, and almost all the moral sources of mental excitement, and that the members of civilized communities are subjected to it, because the enjoyments and blessings of augmented power are abused; because the mind is roused to exertion without being disciplined, it is stimulated without being strengthened; because our selfish propensities are cultivated, while our moral nature is left barren, our pleasures becoming poisonous; and because in the midst of a blaze of scientific light, and in the presence of a thousand temptations to multiply our immediate, by a sacrifice of our ultimate gratifications, we remain in the darkest ignorance of our own mind, its true relations, its dangers, and its destiny. With civilization then come sudden and agitating changes and vicissitudes of fortune; vicious effeminacy of manners; complicated transactions; misdirected views of the objects of life; ambition, and hopes, and fears, which man in his primitive state does not, and cannot know. But these neither constitute, nor are they necessarily connected with civilization. They are defects, obstacles which retard the advancement of that amelioration of condition towards which every discovery in arts, or ethics, must ultimately tend. To these defects, and not to the amount of improvement, or refinement of a people is insanity to be traced. Statistics, the best guide in such an inquiry, support this view. Esquirol's tables of the moral causes of insanity clearly show that a great majority of these are identical with the vices, passions, corruptions, and weaknesses of our nature, or with deviations from what all good or great men understand to be the objects of civilization. Few cases can be traced, except where hereditary predisposition exists, to the well regulated efforts, the virtuous contentment, or the settled principles of a highly educated mind, or to the affluence, the enterprise, the information, or the polish by which these may be accompanied; and these it is conceived are the legitimate products of civilization. And even when a hereditary taint creates danger where it would not otherwise exist,

it must be remembered, that it may have been originally contracted through the ignorance or error of some individuals, in cherishing some predominating passion, or by intermarriage with an impure stock. Vicious as the effect unquestionably is of over-exertion of the intellectual powers, or of giving an undue preponderance to any faculty, and much as the prevailing systems of education tend to encourage such a practice, I find that out of a total of 472 cases given by Esquirol, 13 only are referred to an excess of study, while about an 100 are the fruit of the excess of the propensities, and 90 result from an uneducated and ill-regulated state of the sentiments. Georget's lists afford similar evidence. He enumerates 25 victims of mental labour, 20 of an ill-conducted education, 106 drunkards, and 470 affected from other moral causes out of about 1000 cases."—Pp. *53, 54*.

The third lecture contains a fearful catalogue of the crimes and cruelties formerly perpetrated in asylums. The darkest and most heartless of these occurred in private establishments, and a perusal of this portion of Mr Browne's work will make the practitioner pause before he consigns his patient to the care of irresponsible individuals, keeping private houses of detention, instead of placing him in those asylums, which are under public management, and conducted by responsible officers.

In the fourth lecture Mr Browne exposes what he conceives to be the errors and faults of the asylums of this country as at present constituted. These are the general want of classification, employment, and exercise; inattention to the heating and ventilation of the edifices appropriated to the reception of the insane; harshness and unnecessary coercion; an insufficient number of attendants, and their deficiency in those qualifications which are necessary to fit them for the performance of their duties; the want of convalescent wards; and the unnecessary exclusion of the friends of the patients, &c. To these may be added the adoption of a general plan for the treatment of patients in every state, and the want of the means of instructing medical men practically in the management of the disease.

In eradicating these evils the Legislature might perform an important part. "Were men of enlightened minds," says the author, "liberal education, and kind disposition, alone appointed or permitted to attend the insane, * * these abuses would disappear. To accomplish this it would become necessary that all asylums should be public, and under the control of Government, or of parties incorporated by charter for the purpose. The great objects in such a change would be, that all the proceedings of those immediately intrusted with the insane should be patent to the public, and to the legal authorities, and under the management of a body whose sympathies are all engaged in favour of the patient, rather than of his attendants. To bring about such a revolution as would place all asylums in the class of public hospitals, there would be required no act of suppression, no bill of pains and penalties against private asylums, houses of detention, &c. Render county asylums perfect, elevate all to the rank which a few now occupy, give them the means of curing ninety in place of forty-two in a hundred, and increase the opportunities of affording protection and happiness to those who cannot be farther benefited, and the number of private institutions would speedily decrease, and, if improvement was pushed sufficiently far, they would in all probability cease to exist; or should this result not ensue, they must, in self-defence, adopt the system pursued by their rivals—a step which would effect all that is desired or desirable. The difference between the interests of the proprietor of a private and the superintendent of a public establishment is very obvious. It is the interest of the former to detain as long, while it is the interest of the latter to dismiss as soon, as possible. The man who is the servant, and is paid by the public, is anxious for, and knows that his prosperity depends upon cures; whereas the man who is paid by patients or their friends knows or thinks that his prosperity depends upon admissions, and the duration of the complaint. This may be a short-sighted, but it is a common policy. I do not mean to insinuate that such motives generally actuate the proprietors of such establishments. Many of them are models of the system which is here advocated. But such principles of action may be, as they are known that they have been, the cause of protracting the cure of the convalescent, and of perpetuating the imprisonment of the sane. The merit of the change now proposed would consist in preventing any act to which a humane and intelligent body of the community were not parties, and of divesting the care of the insane of every occasion for the exercise of selfish and unworthy motives."—Pp. 173-4-5.

The fifth lecture is devoted to an exposition of what Mr Browne considers asylums ought to be, and is interspersed with remarks on the mind and education necessary for medical superintendents of such institutions. His observations on the sites on which asylums should be built, the construction, ventilation, and warming of the building, the classification, clothing, and occupation of the patients, &c., will be read with pleasure and improvement. The following extract, with which we conclude our brief notice of the work, exhibits Mr Browne's notion of the *beau ideal* of an asylum. By some the plan will be looked upon as utopian. We, however, consider it to be perfectly practicable, and trust that the time is not far distant when numerous proofs will convince the most sceptical. In the meantime we recommend those interested in the subject to view some of the French establishments.

"Conceive a spacious building, resembling the palace of a peer, airy, elevated, and elegant, surrounded by extensive and swelling grounds and gardens. The interior is fitted up with galleries and workshops, and music rooms. The sun and the air are allowed to enter at every window; the view of the shrubberies and fields and groups of labourers is unobstructed by shutters or bars; all is clean, quiet, and attractive. The inmates all seem to be actuated by the common impulse of enjoyment, all are busy, and delighted by being so. The house and all around appears a hive of industry. When you pass the lodge, it is as if you had entered the precincts of some vast emporium of manufacture; labour is divided so that it may be easy and well performed, and so apportioned that it may suit the tastes and powers of each labourer. You meet the gardener, the common agriculturist, the mower, the weeder, all intent on their several occupations, and loud in their merriment. The flowers are tended and trained and watered by one, the humbler task of preparing the vegetables for table is committed to another. Some of the inhabitants act as domestic servants, some as artisans, some rise to the rank of overseers, The bakehouse, the laundry, the kitchen, are all well supplied with indefatigable workers. In one part of the edifice are companies of straw-plaiters, basket-makers, knitters, spinners, among the women; in another, weavers, tailors, saddlers and shoemakers among the men. For those who are ignorant of these gentle crafts, but are strong and steady, there are loads to carry, water to draw, wood to cut, and for those who are both ignorant and weakly, there is oakum to tease, and yarn to wind. The curious thing is, that all are anxious to be engaged, toil incessantly, and in general, without any other recompense than being kept from disagreeable thoughts, and the pains of illness. They literally work in order to please themselves, and having once experienced the possibility of doing this, and of earning peace, self-applause, and the approbation of all around, sound sleep, and it may be some small remuneration, a difficulty is found in restraining their eagerness and moderating their exertions. There is in this community, no compulsion, no chains, no whips, no corporal chastisement, simply because these are proved to be less effectual means of carrying any point than persuasion, emulation, and the desire of obtaining gratification. But there are gradations of employment. You may visit rooms where there are ladies reading, or at the harp, or piano, or flowering muslin, or engaged in some of those thousand ornamental productions, in which female taste and ingenuity are displayed. You will encounter them going to church or to market, or returning from walking, riding, and driving in the country. You will see them mustering at the bedside of some sick companion. Another wing contains those gentlemen who can engage in intellectual pursuits, or in the amusements and accomplishments of the station to which they belong. The billiard-room will, in all probability, present an animated scene. Adjoining apartments are used as news rooms,—the politicians will be there. You will pass those who are fond of reading, drawing, music, scattered through handsome suits of rooms, furnished chastely, but beautifully, and looking down upon such fair and fertile scenes, as harmonize with the tranquillity which reigns within, and tend to conjure up images, and beauty, and serenity in the mind, which are akin to happiness. But these persons have pursuits, their time is not wholly occupied in the agreeable trifling of conning a debate, or gaining so many points. One acts as an amanuensis, another is engaged in landscape painting, a third devolves to himself a course of historical reading, and submits to examination on the subject of his studies, a fourth seeks consolation from binding the books which he does not read.* In short, all are so busy as to overlook, or all are so contented as to forget their misery.

"Such is a faithful picture of what may be seen in many institutions, and of what might be seen in all, were asylums conducted as they ought to be."—Pp. 229, 30, 31.

The last extract exhibits all the faults of Mr Browne's style. Though perhaps well enough adapted for a discourse to a mixed audience, it is far too florid for a didactic work like the present. Notwithstanding this fault, which, though great, is the only one, we recommend Mr Browne's work to the public as worthy of attentive consideration, containing, as it does within a short compass, a digest of much useful information on the management of the insane, and breathing throughout a spirit of philanthropy which does honour to his feelings, and shows how well qualified he is for the situation which he holds.

ART. VI.—*An Exposition of the Signs and Symptoms of Pregnancy, the period of Human Gestation, and the signs of recent Delivery*. By W. F. MONTGOMERY, A. M. M. D., M. R. I. A., Vice-President, and Professor of Midwifery in the King and Queen's College of Physicians in Ireland. 8vo. London, 1837, Pp. xxiv. and 344. Eleven Plates.

In the present volume, Dr Montgomery has presented us, in a new and enlarged form, with his article on the signs and symptoms of pregnancy, which appear in the Cyclopædia of Practical Medicine. The confessedly important nature of the subjects which he investigates, and the learning, experience, and acuteness which he brings to their illustration, justify us in giving a very full analysis of the work.

Before entering on the consideration of individual signs of pregnancy, the author devotes a chapter to general observations on the state of the female during pregnancy, in which, after briefly noticing the change of the *uterus* and system at large, the effects produced on the nervous and vascular systems, and the altered relations of the organs, he proceeds to point out the dangers of repletion, and want of exercise to the mother, and the effects of moral and mental emotions during pregnancy.

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* "To exemplify the various modes of engaging the attention of lunatics, it may be mentioned that the manuscripts of these pages were transcribed, and the proofs corrected, by individuals in the asylum, under my charge."

Among the physical changes which the uterine system undergoes in consequence of impregnation, one of the most important is the increased size and number of the nerves distributed to it, and that exaltation of their sensibility, which induces increased irritability of the system generally. This increased irritability causes the patient to be more easily affected by circumstances which give rise to mental emotions, and hence the importance of preventing her, as far as possible, from being exposed to causes likely to distress or otherwise strongly impress the mind. In illustration of the evil effects which may be produced by mental emotions, Dr Montgomery gives the following cases.

" I was once urgently called to see a lady who had gone to the theatre, when two months pregnant, to witness some grand spectacle, in which armed knights on horseback were to cross a bridge and storm a castle; while doing so the bridge gave way, and the cavalcade were precipitated into the canvass torrent, and some of them much hurt: the lady was dreadfully terrified, screamed, fainted, and was carried home almost insensible; when it was discovered that she was flooding profusely, under the influence of which, and the previous fright she soon became alarmingly exhausted. However, by the adoption of proper measures she was restored and tranquillized, but she miscarried before morning.

" Another case was that of a lady, who, after passing several years of her life in straitened circumstances and actively employed, married when no longer very young, and was thereby placed in a condition of comparative affluence, which, unfortunately for herself, enabled her to dispense with any further exertion, and to indulge a natural inclination to indolence and sedentary habits. She soon became pregnant, and spent her whole day lying on a sofa at the fireside, or with her feet on the fender, reading novels, eating and drinking heartily, and having a discharge from the bowels perhaps once or twice in the week. Amongst the books which she thus daily devoured was one containing a highly wrought description of one of the Maisons de Santé, in France, and of its inmates; this affected her strongly, and took great hold on her mind, and she expressed the greatest desire to visit one of the large lunatic asylums in this city, that she might assure herself of the reality of such things as she had been reading of. In this wish she was indulged, as in every thing else, whether right or wrong, to which she took a fancy, and the consequence was that the appearance of the persons she had seen, and their extravagant expressions and gesticulations, continued to haunt her imagination incessantly up to the time of her delivery, on the third day after which she showed symptoms of insanity, which became rapidly confirmed, and continued for many months. During her illness, and after her recovery, she repeatedly told me, that from the time of reading the book and visiting the asylum she felt as if she would certainly become deranged."—Pp. 13, 14.

Dr Montgomery next shews the necessity of pregnant women from witnessing disgusting objects of any kind, because, though in many instances no injury may be done the child, their minds are apt to be disturbed with anticipations of some deformity likely in their opinion to ensue. He conceives, besides, that, if mental emotions can kill the child, they may modify its organization. An instance of this occurred to him about two years ago, which we shall give in his own words, premising, as he himself has done, that it presents something more than a mere though striking coincidence.

"A lady, pregnant for the first time, to whom I recommended frequent exercise in the open air, declined going out as often as was thought necessary, assigning, as her reason, that she was afraid of seeing a man whose appearance had greatly shocked and disgusted her; he used to crawl along the flag-way on his hands and knees, with his feet turned up behind him, which latter were malformed and imperfect, appearing as if they had been cut off at the instep, and he exhibited them thus and uncovered, in order to excite commiseration. I afterwards attended this lady in her lying-in, and the child, which was born a month before its time, and lived but a few minutes, although in every other respect perfect, had the feet malformed and defective precisely in the same way as those of the cripple who had alarmed her, and whom I had often seen.

"Now here was an obvious and recognized object making a powerful impression of a disagreeable kind, complained of at the time, and followed by an effect in perfect correspondence with the previous cause, there being between the two a similarity so perfect that, with the distinguished author above referred to, I 'will not easily suppose that chance could have been so ingenious, if I may be allowed to speak thus, and so exact an imitator,' and though I must acknowledge in the words of Van Swieten, 'that I do not understand the connexion of the cause acting upon the mother with the effect observed in the fœtus,' I also agree with him that it must not therefore be denied that such a thing has really happened, and while I reject totally those relations which can attract attention only by the monstrous absurdities with which they overtax our credulity, I would not wish to adopt the philosophy of those 'multi medici' complained of by Galen, 'qui rerum, quæ manifeste conspiciuntur, causas reddere nequeuntes, eas esse omnino negant,' for were such a rule of judging to be adopted there would indeed 'be too many things in physics that I must deny, if they were to be denied, because I do not understand the manner in which they are brought about.' Many of the acknowledged and demonstrable phenomena connected with generation should thus be rejected as untrue, because inexplicable, and among others one may be selected, which, from reasoning alone, would appear far more incredible than could be any effect produced on the fœtus in utero, by a cause acting on the mother during its gestation. I allude to the well-known fact, that when the Earl of Morton's Arabian mare was covered by the quagga, not only did the mule so begotten partake of the characters of the sire, but when the mare was subsequently submitted to an Arabian stallion, by whom she had three foals at different times, the first two continued to exhibit some of the distinctive peculiarities of the quagga conjoined with the characters of the Arabian breed. Mr Mayo mentions that a similar occurrence was observed by Mr Giles in a litter of pigs, which resembled in colour a former litter by a wild boar. Such occurrences appear forcibly to suggest a question, the correct solution of which would be of immense importance in the history and treatment of disease. Is it possible that a morbid taint, such as that of syphilis for instance, having been once communicated to the system of the female, may influence several ova, and so continue to manifest itself in the offspring of subsequent conceptions, when impregnation has been effected by a perfectly healthy man, and the system of the mother appearing to be at the time and for a considerable period previously, quite free from the disease. My belief is certainly in favour of the affirmative."—Pp. 17, 18.

Dr Montgomery next directs the attention of the reader to the effect of pregnancy on the temper, intellect, and health of the woman; and after mentioning some of the more extraordinary affections connected with that state, concludes the chapter by giving a short summary of the legal protections which in ancient times were conferred on pregnant women, and contrasting them with the present state of the English law.

In the second chapter, the author enters more particularly into his subject; and in stating the difficulties with which the medical man is beset in his attempt to ascertain the existence or non-existence of pregnancy, and the cases in which he may be called on to do so, gives the following ludicrous instances of pertinacity, on the part of females denying their situation. "I was once called to see an unmarried patient whom I found in labour, and even when the feet of the child were beyond the external parts, she resolutely denied that she was pregnant; and afterwards persisted that she never had incurred the risk of impregnation, though it was ascertained that she had lain-in twice before. A medical friend of mine was called hastily to the house of a patient to see a young woman who, being taken very ill with a colic, as she said, had retired to bed, and was soon afterwards delivered of a child, whose cries disclosed the truth; when questioned, she requested the child might be taken away, as it was a trick played on her by some of her fellow-servants, who, wishing to injure her, had procured a child and put it into her bed while she was asleep; the cord was still undivided, and the placenta retained *in utero*."—Pp. 31-2.

After narrating some horrid instances in which pregnant women were executed, Dr Montgomery alludes to the writ *de ventre inspiciendo*, and gives the following case, in which it was actually sued for within the last three years. As this case is reported in none of our manuals of medical jurisprudence, we shall give it at length.

" Mr Fox of Uttoxeter, aged about sixty, died in May 1835, leaving a widow, to whom he had not been married much more than six weeks. The widow announced herself to be with child, and entered a caveat to the probate of the presumptive legatee, Mr Marston; whereupon the latter immediately applied for a writ *de ventre inspiciendo* to ascertain the lady's pregnancy. The lady, however, became alarmed by what she heard about the nature of the examination,[*] and petitioned the court not to grant the writ, which it was argued, was not called for, as it presumed fraud on the part of the female; but this was over-ruled by the Vice-Chancellor, who held that suspicion of fraud was not necessary, and that the mere assertion of pregnancy was sufficient to support the application. Mr Marston did not insist on a compliance with the forms of the ancient writ, but merely that the lady should be examined by professional persons selected by him; but as Mrs Fox would not consent to this, the conditions prescribed by the old law were held to be the only alternative. The widow put in a number of affidavits to avert the law process, and stated that in consequence of the recent death of her husband, and many other circumstances which had subsequently taken place, her mind was in such a state as to render her unable to undergo the examination required by the writ: the medical attendant of the family deposed that he had examined her, and believed her to be pregnant, and farther added his opinion, that the kind of examination prescribed by law would be likely to do injury to her and the child; but that, if two months were allowed to elapse, the doubt and danger would be removed. Other witnesses deposed that Mrs Fox was a delicate woman, and a person of modesty. Under these circumstances the Vice-Chancellor, who said that from reading all the affidavits, he was satisfied that there was strong ground for believing the lady to be with child, thought it best to let the matter stand over for a month, by which time farther proceedings might be unnecessary. At the end of that time, however, the parties not being likely to agree, and two affidavits from medical men being put in to the effect that Mrs Fox was now in the fifth month of her pregnancy, which, however, did not satisfy the counsel on the opposite side, the court made a final arrangement. The Vice-Chancellor said that there was no doubt the applicant had a *right* to the writ, but that the lady on the other hand, did not deserve to be treated with the severity of the ancient process. He therefore adopted a middle course, and left it to the master to appoint two matrons, who, with a medical man on each side, should visit Mrs Fox once a fortnight, giving her two days notice previous to each visit. The lady was afterwards delivered of a son and heir."—Pp. 35–6–7.

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[*] " Which certainly must be as formidable and revolting to the feelings of the female as it is repugnant to our notions of propriety and decency; the ancient writ runs thus. ' Tibi præcipimus quod assumptis tecum *duodecim discretis et legalibus militibus* et duodecim discretis et legalibus mulieribus de comitatu tuo, in propria personâ tuâ accedas ad præfatam R. et eam *coram præfatis militibus* videri et diligenter examinari et tractari facias per ubera et ventrem in omnibus modis quibus melius certiorari poteris utrum impregnata sit necne," &c. Register Brevium, 227.

The signs and proofs of pregnancy, which are to be collected from various different sources, are arranged by the author under three heads, the presumptive, the probable, and the unequivocal. They are not, however, discussed in this order. The first which he considers are, suppression of the *menses*, nausea and vomiting, salivation, and mammary sympathies.

1*st*. *Suppression of the Menses*.—This is a symptom, the drawing of any conclusion from which is attended with two difficulties; first, that it must be received from the patient herself, and there is generally no opportunity of confirming or refuting her evidence on the point; and, secondly, that it is liable to many exceptions and deviations. These exceptions and deviations may be divided into those which show that a woman may have suppression of the menses without being pregnant, and pregnant without the menses being suppressed.

In respect to the first, it may be observed, that conception has taken place previous to menstruation, as proved by cases which have occurred to Morgagni, Frank, Low, Capuron, Foderé, Sir E. Home, and the author. In some women, again, the menstrual periods are very irregular; and Zacchias and Mauriceau give each a case in which the patient never conceived till the menses had been suppressed for some months. It has occasionally happened also, that conception has occurred after menstruation had apparently ceased; and sometimes, though the instances are of course rare, women will conceive when the menses have been long suppressed in consequence of disease. "About four years ago," says the author, "I attended a patient, a married woman, named E. G. whose pregnancy was not even suspected by herself or her friends, till she miscarried of a fœtus of five months. She was labouring under disease of the heart, which had induced dropsy, and had had no menstrual discharge *for two years previous to conception*. Her abdomen had increased in size, but this was attributed to her dropsical state; she had sick stomach, but so she had had for a whole year before, and she was taking medicines likely to nauseate. There was scarcely any change in the breasts." Nurses may conceive without any return of the catamenia. When, however, the discharge returns once and not again, while at the same time there is a diminution of the quantity of the milk, Dr Montgomery has always observed that both suppressions were the result of conception. A case is mentioned by Dr Ingleby in which this occurred nine times successively, so that between each pregnancy and the succeeding one, the discharge appeared only once. Taking the foregoing facts into consideration, and also that different forms of disease, exposure to cold and hardship, and various mental emotions, may lead to the same result, we find that there are many circumstances in which, taking the absence of the menstrual discharge as a proof of pregnancy, or its never having appeared, or its being suppressed by disease, as an indication of the impossibility of conception, would lead us into positive error.

Dr Montgomery next alludes to another variety of suppression, which is less known than those already mentioned. We quote the author's description and remarks.

" There is another variety of suppression, which, as peculiar in its circumstances, and apparently depending on change of habit, without reference to any morbid or indeed other appreciable cause, is particularly likely to deceive. I allude to the suppression which not unfrequently occurs in young and newly married females, for two or three periods, while at the same time, as is very usual, the breasts increase in size and become sensitive, and the patient readily believing such testimony of what she wishes, entertains no doubt whatever as to her state, until after the lapse of a couple of months, an appearance takes place, which, although in every respect the same as the patient's ordinary menstruation, and without any of the symptoms of miscarriage, is at once set down as the commencement of that accident, and we are called on to prescribe. Such cases are by no means unfrequent in their occurrence, but they are always liable to great doubt, and extremely embarrassing to the practitioner, who must act with great caution, and give a very guarded opinion. Schmitt's ninth case, first division, is a well marked instance of this state, and in his thirteenth case the suppression continued for nine months after marriage in a very young woman, during which time the abdomen enlarged, and then pains came on like those of labour, but nothing was expelled, and the abdomen subsided, as happened also to the physician's daughter mentioned by Harvey. In a case lately seen by the writer, the lady who had been, during her virgin life, subject to dysmenorrhœa with irregularly prolonged menstrual periods, has since her marriage had the discharge suppressed several times for two or three periods in succession, with equivocal accompanying symptoms of pregnancy and uninterrupted good health; these suppressions have each time terminated with an accession of pain like what she used formerly to experience at her menstrual periods, followed by a gush of sanguineous discharge, and the ejection of flakes of membrane, having all the characters of that formed in dysmenorrhœa, but without any trace of the structures of an ovum. There appears to me great reason to believe, that in some of these cases conception really occurs, and gives rise to the alterations observed in the system, but the ovum perishing, no evidence is furnished of its existence, and to such a state as this, the observation of Harvey clearly points when he says, 'For although the female sometimes conceiving after coition doth not produce a fœtus, yet we know that those symptoms did ensue, which gave a clear testimony of a conception set on foot, though it came to nothing.'"—Pp. 44–45.

Dr Montgomery next discusses the question as to whether the presence of the catamenia is to be received as a proof that a woman is not pregnant. The affirmative has been vigorously maintained by Denman, Hamilton, and Schmitt. The latter, however, mentions two cases of individuals menstruating after conception, and one of them regularly for seven periods. Dr Montgomery, besides quoting several instances from the highest authorities, states positively, that he has met with several cases of menstruation occurring *once* after conception; that he is in the habit of attending two ladies to both of whom it has happened; and that one of them, who has had four children, assured him that she always knew when she had fallen with child by the unusual profuseness of the first period. It has been objected that such discharges are not menstrual. But the question is not whether they be what a physiologist would deem menstrual. This is a mere dispute about terms. We have only, as the author very justly remarks, to consider "whether there does not frequently, during pregnancy, take place a coloured discharge from the vagina, so closely resembling menstruation in its periods, quantity, and duration, that neither the woman herself, nor the medical inquirer, shall be able to detect any difference between; and of this I must declare with Deewes and Gooch, there can be no doubt." That many reputed cases of this kind have obtained credence without sufficient inquiry is undeniable, and as little doubt can there be that the discharge does not proceed from the interior of the uterus, otherwise the safety of the ovum would be compromised. But neither Dr Denman, Dr Hamilton, nor Dr Schmitt has told us how this discharge is to be distinguished from true menstruation, and till some test be discovered by which this can be accomplished, it is not justifiable to consider the presence of the discharge of a menstrual nature, as a positive proof of the non-existence of pregnancy.

"The last and perhaps most remarkable exceptions to the general rule, to which it appears necessary to allude, are those very singular cases in which menstruation has either appeared for the first time after conception, or in which it continued only during pregnancy. Perfect's eightieth case affords a very satisfactory instance of the former; and Mr Reid has recently published the case of a woman of twenty-six years of age, who had previously borne children, of whom he mentions as a curious fact, that during the nine years that she had been married, she had never seen the catamenia until she became pregnant with her last child, after which, up to the term of quickening, they appeared regularly every month; but she was always able to judge pretty correctly as to the time of conception by a peculiar sensation of drowsiness, attended by sickness, which then immediately affected her. Daventer, Dewees, and Baudelocque furnish us with examples of women whose habit it was to menstruate *only* during pregnancy, and who did so through the whole period of that condition, though never at any other time." —Pp. 49–50.

Dr Montgomery next cautions the physician against one means of deception which may be practised towards him by the patient, that of staining the linen, so as to induce him to suppose that she had lately menstruated, or that the menses were still flowing. He also calls the attention of the reader to those cases in which the menses, after being secreted, are retained either by imperforate hymen, or some adventitious structure, and then sums up in the following words.

> "Such exceptions having been proved to exist, should always be taken into account to guard us against error; but it should be acknowledged as a general rule, to which there will be found but few exceptions, that when suppression of the menstrual discharge takes place in a healthy woman, previously regular in its returns, who has not sustained any accident, and continuing for some months, is not attended with any impairment of health, it ought to be regarded as a circumstance strongly indicative of pregnancy, especially if accompanied by other ordinary symptoms of that state; and, on the other hand, considering that menstruation continues in only a very few instances after conception, the regular appearance of that discharge ought certainly to be esteemed a forcible presumption against the existence of pregnancy, ever remembering, however, that the case in question may be one of the rare exceptions."—Pp. 52, 53.

2. *Nausea and vomiting—Salivation.* Nausea and vomiting, though frequent, or rather general, concomitants of pregnancy, may arise from other causes, more especially, suppression of the menses, so that a hasty inference is not to be drawn from the presence of such symptoms. In general the vomiting in pregnancy is accompanied by no symptom of bad health, the patient has a good appetite, and takes her food with as much relish as ever. In the midst of a meal, however, or immediately after, the whole contents of the stomach will be rejected, and the patient immediately feel well again. "In some instances, the woman is distressed by a perpetual nausea, and in a few rare cases vomiting has been so excessive, as to endanger or even destroy

the life of the woman from inanition, or by rupture of some internal organ."

The salivation of pregnancy may be distinguished from that induced by mercury, by the absence of sponginess and soreness of the gums, and of the peculiar fœtor which always attends mercurial ptyalism. But salivation with the absence of the characters now named may arise from other causes, and it hence cannot be depended on as a positive proof of pregnancy.

3. *Mammary sympathies.* The effects of pregnancy on the breasts are enlargement and sensibility of these organs, the areola, and the secretion of milk.

a. Enlargement and sensibility of the Mammæ. These occur independent of pregnancy. But the enlargement and sensibility of the mammæ resulting from conception, and appearing about two months thereafter, may be distinguished from those arising from many other causes by a patient and careful examination. When the enlargement is the result of fat, the breasts will not feel so firm, and there will be a corresponding fulness over the whole body. The swelling and pain accompanying each return of the catamenia in weak irritable patients, especially if subject to dysmenorrhœa, generally subside in two or three days, whereas those caused by pregnancy continue to increase, except when the ovum happens to be blighted. In many women, however, the breasts enlarge from marriage, and the habits arising from it. Sometimes at the turn of life, when the menses are naturally suppressed, and the individual at the same time grows fatter, the breasts become full, and not unfrequently painful,—" which circumstances concurring are often improperly considered in the light of cause and effect, and irritability of the stomach being at the same time experienced, the woman believes herself pregnant." These facts show that enlargement and pain of the mammæ cannot be relied on as infallible signs of pregnancy.

But farther, conception may have taken place, and these signs may nevertheless be absent.

" It not unfrequently happens, that in women of weakly and delicate constitution, very little change can be observed in the breasts till pregnancy is far advanced, or even up to its termination. I lately attended a lady whose health had been delicate during her pregnancy, and no perceptible change took place in the breasts until the fifth day after delivery. Gardien asserts that the swelling of the breasts is not observable in women who menstruate during the early months of pregnancy, and Mahon makes the same observation. I cannot undertake to affirm how far this may be correct as a general rule, but I think I have observed that when women have irregular hemorrhages during gestation, especially with placental presentation, the mammary sympathies are in general very feebly exerted, thus rendering a doubtful case still more so by such a combination."—Pp. 57–58.

b. The Areola.—The alteration which takes place in that part of the breast which is immediately around the nipple, and is called the areola, is considered by Dr Montgomery as one of the most certain external indications of pregnancy, arising from the operation of sympathy, as, according to his experience, that state alone can produce it. Much of the discrepancy of opinion which has existed on this subject among the profession, he believes to have arisen from want of sufficient care in observing, and accuracy in describing the essential characters of this sign. We quote the author's description, which we believe to be the fullest yet given.

"Most of those who have noticed this change appear, from their observations on it, to have attended to only one of its characters, namely, its colour, which is, in my opinion, the one of all others most liable to uncertainty. I should here perhaps except the description of Rœderer, which is by far the most accurate I have met with: 'Menstruorum suppressionem mammarum tumor insequitur, quocirca mammæ crescunt, replentur, dolent interdum, indurescunt; venæ earum cœruleo colore conspicuæ redduntur *crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens, qui in latitudinem majorem expanditur, parvisque eminentiis quasi totidem papillulis, tegitur.*' * The several circumstances here enumerated at least, ought in all cases to form distinct subjects of consideration, when we propose to avail ourselves of the condition of this part as an indication of the existence or absence of pregnancy. One other also equally constant and deserving of particular notice, is a soft and moist state of the integument, which appears raised, and in a state of turgescence, giving one the idea that, if touched by the point of the finger, it would be found emphysematous; this state appears, however, to be caused by infiltration of the subjacent cellular tissue, which, together with its altered colour, gives us the idea of a part in which there is going forward a greater degree of vital action, than is in operation around it; and we not unfrequently find that the little glandular follicles or tubercles, as they are called by Morgagni, are bedewed with a secretion sufficient to damp and colour the woman's inner dress. These changes do not take place immediately after conception, but occur in different persons after uncertain intervals; we must therefore consider, in the first place, the period of pregnancy at which we may expect to gain any useful information from the condition of the areola. I cannot say positively what may be the earliest period at which this change can be observed, but I have recognized it fully at the end of the second month, at which time the alteration in colour is by no means the circumstance most observable, but the puffy turgescence (though as yet slight) not alone of the nipple, but of the whole of the surrounding disk, and the developement of the little glandular follicles are the objects to which we should principally direct our attention, the colour at this period being in general little more than a deeper shade of rose or flesh-colour, slightly tinged occasionally with a yellowish or light-brownish hue. During the progress of the next two months, the changes in the areola are in general perfected or nearly so, and then it presents the following characters, a circle around the nipple, whose colour varies in intensity according to the particular complexion of the individual, being usually much darker in persons with black hair, dark eyes, and sallow skin, than in those of fair hair, light-coloured eyes, and delicate complexion. The extent of this circle varies in diameter from an inch to an inch and a-half, and increases in most persons as pregnancy advances, as does also the depth of colour. I have seen the areola at the time of labour almost black, and upwards of three inches in diameter, in a young woman of very dark hair and complexion; while in another instance lately seen by the writer, its breadth around the base of the nipple did not at any time of gestation amount to a quarter of an inch, and at first was not more than an eighth; this circle, however, narrow as it was, was studded at nearly regular intervals with the glandular tubercles, which were not unlike a ring of beads. In negro women, the areola becomes jet-black, with somewhat of a purple shade through it.

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* "Element. art. obstet. pp. 46–7. The description by Musitanus is tolerably accurate, but not so full.—Vide his work, p. 64.

"In the centre of the coloured circle the nipple is observed partaking of the altered colour of the part, and appearing turgid and prominent, while the surface of the areola, especially that part of it which lies more immediately around the base of the nipple, is studded over, and rendered unequal by the prominence of the glandular follicles, which, varying in number from twelve to twenty, project from the sixteenth to the eighth of an inch, and lastly, the integument covering the part appears turgescent, softer and more moist than that which surrounds it, while in both, there are to be observed at this period, especially in women of dark hair and eyes, numerous round spots or small mottled patches of a whitish colour scattered over the outer part of the areola, and for about an inch or more all round, presenting an appearance as if the colour had been discharged by a shower of drops falling on the part. I have not seen this appearance earlier than the fifth month, but towards the end of pregnancy it is very remarkable, and constitutes a strikingly distinctive character, exclusively resulting from pregnancy; the breasts themselves are at the same time generally full and firm, at least more so than was natural to the person previously, and venous trunks of considerable size are perceived ramifying over their surface, and sending branches towards the disk of the areola which several of them traverse; along with these vessels, the breasts not unfrequently exhibit, about the sixth month and afterwards, a number of shining, whitish, almost silvery lines like cracks; these are most perceptible in women who, having had before conception very little mammary developement, have the breasts much and very quickly enlarged after becoming pregnant; * * when once formed, these lines continue permanent, and, consequently, will not serve as diagnostic marks in a subsequent pregnancy. Such then are the essential character generally belonging to, or connected with the true areola, the result of pregnancy, and when found possessing these, it ought to be regarded as a very strong proof of the existence of that condition, no other cause being capable of producing it, while it affords us facilities in forming an opinion not otherwise unavailable, first, in being appreciable at those early periods of gestation which are involved in most doubt, and, secondly, that opportunity will be given of examining it, when other modes of investigation would be denied us, or when perhaps the bare mention of a suspicion could not be ventured on."—Pp. 59–63.

Excellent as the test now mentioned is, there are certain circumstances which may modify the certainty of our conclusions. Pregnancy may exist, and the areola be deficient in that which, by many, is reckoned to be its most important distinctive mark,—the colour. But if all the other characteristic changes mentioned above be present, there need be no difficulty. Should the fœtus be blighted, the characters of the areola will decline and fade away, the tubercles will shrink, and be no longer bedewed with the moisture already mentioned. In respect to the colour alone, Dr Montgomery conceives, that where we find a circular disk of a dark brownish shade round the nipple, especially in a woman of light hair and a fair complexion, even though it should be unaccompanied with the other changes natural to the part, it affords very strong presumptive evidence of a present or former state of pregnancy. When so accompanied he has never been deceived in it. He has seen it at the time of labour presenting the dark circle alone, without the prominence of the glandular follicles, but never saw them developed in conjunction with the other changes mentioned without the concurrence of pregnancy. Though their presence be a very convincing proof of previous conception, their absence is no proof that this has not taken place. "Again, we must recollect that a woman may be presented to us for an opinion, who, having perhaps very recently miscarried, her breasts may exhibit all the true characters of the areola combined with several other circumstances really indicating a state of pregnancy; but if we do not use great caution in giving our opinion, it will in such a case appear falsified by the event, although really correct. In nurses, also, the characters of the areola are kept up, and continue in a state of wonderful perfection."

If a woman has been pregnant before, and particularly if she has suckled or is nursing, it may embarrass our investigations. The colour of the areola, which, according to Dr Montgomery, depends on the deposition of an actual pigment between the cuticle and subjacent skin, is in some individuals, especially those of a fair complexion, removed some time after delivery, and the breast resumes its virgin appearance. In others it remains permanent, together with a slight prominence of the glands, which may deceive an inexperienced eye. In some young women, too, the areola assumes a colour resembling that occasionally observed around or under the eyes, and in swarthy complexioned individuals, it is found in the virgin state still darker. The practitioner, however, by a little experience, will be enabled to avoid all those sources of error.

The author, after some remarks on the opinions held on the subject by different writers, proceeds to consider another effect of mammary sympathy.

c. Milk in the breasts.—Although there be numerous instances of milk being secreted without the concomitance of pregnancy, of which several are quoted by the author, it is a symptom by no means to be overlooked, because, if found in connection with others of the rational symptoms of that state, it may confirm our belief, especially if the woman has not been pregnant before. In doubtful cases, however, it is not in general to be taken as a guide, because milk is not commonly secreted till after parturition, and if it should appear during pregnancy, it is not till other means of judging be in our power which are less liable to uncertainty.

4. *Quickening * and motions of the fœtus.*—After making some merited strictures on the state of the law, founded on the exploded doctrine of quickening, and showing that the fœtus enjoys vitality from the first moment of its existence, Dr Montgomery proceeds to point out the difficulties which may be encountered in endeavouring to make a knowledge of this phenomenon available in any inquiry as to the existence of pregnancy. In the first place, unless the attendant feel the motions of the child, he can have no evidence except the woman's statement, as to the fact of quickening or otherwise. In both cases, she may be mistaken. The motion of the child may be perceptible to another, and not be felt by the mother, and women have firmly believed that they have quickened when no such thing has occurred.

Even though the practitioner be unable to feel the child, or recognize its movements, that is no proof that the woman has not quickened. In cases in which all the circumstances are natural this has occurred, and of course it is more likely to happen when some anomalous or morbid condition is co-existing; for ascites may prevent all motion from being felt, and the presence of an abdominal tumour, especially if large or attached to the uterus, will render it difficult to be detected by the examiner, and scarcely perceptible by the mother. Cases also have occurred in which the fœtal motion has been suspended either altogether or for a considerable time, without the child being at all injured. On the other hand, competent judges have supposed that they felt the motions of the child, when the patients after all were not pregnant. Two instances of this came under Dr Montgomery's observation, and Dr Dewees thought he distinctly perceived the motions of a fœtus in a case which eventually proved to be an accumulation of menstrual fluid in the uterus. In a case of abdominal tumour Dr Ingleby was misled by a distinct crawling movement perceptible within it. The same patient had before exhibited what were considered strong symptoms of pregnancy, with very sensible movements resembling those of a fœtus, but the delusion was put an end to by the discharge of a quantity of fluid *per vaginam.*

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* Dr Montgomery uses this word only in compliance with long established usage.

"The causes of these false sensations are not few; in many they are produced by air in the intestines, passing quickly from one part to another; in others they seem the effect of nervous irritability, and are observed to happen most frequently in hysterical females; sometimes they are produced by spasmodic twitching of some of the abdominal muscles, or a partial contraction of those of the uterus when distended with air or fluid. In some instances the pulsation of the great arteries has been the source of the delusion, especially when felt acting on a tumour, as in the case of an enlarged ovary; but from whatever cause arising, there are two curious facts to be noticed concerning these motions; first, that they are not only perceptible by the woman herself, but easily recognized by others, and not only by the application of the hand, but they are also occasionally visible externally like the true ones; secondly, that in several such cases there has been, at the termination of the imaginary period of gestation, an accession of pains strikingly resembling those of labour. The facts of three cases are fresh in the writer's recollection, in which, under such circumstances, he was brought to attend patients in labour, who were not pregnant. It may be added here in the way of a general observation on these false motions, that when a woman who has been pregnant before, especially if she has been so frequently, and is again exhibiting equivocal symptoms of that condition, declares that the sensations of motion now experienced are totally unlike those formerly felt by her, such dissimilarity should be regarded as suspicious, and detracting from the probability of her being healthily pregnant, if so at all.

"Another source of error would of course be found in a power which it is asserted some women possess, of simulating the motions of the child by certain actions of the abdominal muscles. The writer never met with any such case; but Dr Blundell, who mentions the fact, tells us of a woman who was seen by the late Dr Lowder and other eminent accoucheurs, who simulated these movements so exactly, that had they judged from this sign alone, they would have pronounced her pregnant. The mock prophetess, Joanna Southcott, had also acquired this accomplishment, which appears greatly to have assisted her in carrying on her imposture, by enabling her, when examined, to imitate the fœtal movements, and that too in different parts of the abdomen."—Pp. 83–5.

The author next considers the period at which quickening takes place. This may occur at any time from the tenth to the twenty-fifth week; but the experience of Dr Montgomery leads him to the conclusion, that, in the greatest number of instances, it will be found to appear between the end of the twelfth and sixteenth weeks after conception, or, adopting another calculation, between the fourteenth and eighteenth week after the last menstruation, which very nearly agrees with the statement of Dr Hamilton, grounded on forty years experience, that quickening "takes place at the end of four calendar months after conception." In illustration of the irregularity which sometimes occurs in this respect, several instances are given, both from the author's own practice, and that of others. This portion of the work is concluded with some remarks on the mode to be adopted by the accoucheur to ascertain the motions of the fœtus, and kinds of sensation communicated by them.

5. *Enlargement of the abdomen, and state of the umbilicus.*—After giving a summary of the usual changes which take place in the abdomen after conception, Dr Montgomery proceeds to state the circumstances which throw doubt on this symptom, and the means by which such doubt may, in many cases, be obviated. Various causes may produce enlargement of the abdomen, and be accompanied by other symptoms of pregnancy, when it does not exist, and a woman may be with child without the developement of the abdomen corresponding to the period which has elapsed since conception.

When the enlargement proceeds from pregnancy, and four months have elapsed, if the woman be placed on her back in such a positon that the abdominal muscles shall be relaxed, unless she be very fat, the outline of the uterus may be traced. Even when from fatness or tension of the muscles, the uterine tumour can neither be felt, nor its circumference defined, the attendant will be able to ascertain that the enlargement arises from something which renders the abdomen more solid to the touch than it is naturally. An examination *per vaginam* will detect the co-existence of those changes in the uterus which accompany gestation, and the general health of the woman will be found unaffected by any symptom of disease.

When the increased size of the abdomen is the result of disease not affecting the uterus, a diagnosis may be formed from the history of the case, the duration of the enlargement, the general diseased state of the system, the character and situation of the tumour, the state of the umbilicus and breasts, the total want of correspondence in the symptoms and conditions of the case, if it were pregnancy, and lastly, by a vaginal examination. Even when the uterus itself is distended, though the difficulty may be increased, a correct decision may be made.

"When the abdomen is distended by the accumulation of fat in the omentum or in the integuments, or by the inflated state of the bowels, the very soft and yielding condition of the part under the hand when pressed backwards towards the spine, and the total absence of any solid tumour, as well as of the ordinary symptoms of pregnancy, will form a sufficient basis for an opinion, which may be confirmed by the depressed state of the umbilicus, which in such cases is apt to be considerably sunk."—Pp. 93-4.

Dropsy may give rise to the notion that a woman is pregnant, but if she be not in that condition, there will be no difficulty in forming an opinion of the case. It must not, however, be forgotten that pregnancy and dropsy may co-exist, and in such circumstances, the sensation of quickening is often not felt till a later period than usual, and is apt to be very indistinct. When the quantity of water interposed prevents the fœtal motions, or even the outline of the uterus from being ascertained, an examination *per vaginam*, the state of the breasts, and especially the areola, will be our best guides.

It is well known that some women, from height or peculiarity of form, exhibit their increase of size more or less than others, and that dress may be so managed as to conceal it. It is perhaps, however, more important to recollect that in pregnancy, by the death of the child, the developement of the uterus may be arrested, and the enlargement of the abdomen, so far from increasing, will sometimes diminish, so that the patient, though in reality many months pregnant, may appear of a natural size, or at the end of nine months not larger than she was at four or five. Besides this, there is another condition and that a natural one, under which in pregnancy the abdomen diminishes, and that is about the end of the second month, when the inflation of the intestines subsides.

"During the first two months of pregnancy, the umbilicus is rather retracted and more depressed than usual, in consequence of the descent of the uterus; but when this organ begins to ascend, the umbilicus gradually rises also, so that in the third month, it is restored to its natural state, and on the fourth it is found less hollow than before conception; in the fifth or sixth, it is nearly on a level with the surrounding integuments, and in the sixth or seventh completely so; and towards the end of gestation, it projects in most persons considerably above the surface.

Any solid tumour, however, which enlarges the abdomen may produce elevation of the umbilicus, and therefore we cannot be sure that the agent effecting this is a gravid uterus. But a morbid tumour of a size and elevation as great as those of the uterus in the seventh may exist in the abdomen, and the umbilicus be perfectly depressed. Dr Montgomery has thought that the cause of this is the formation of adhesions preventing the tumour from pressing forward. He is not aware, however, of any instance in which the gravid uterus has acquired such a size without elevating the umbilicus, so that we may conclude that if the umbilicus be found depressed and the belly flat, in any case in which pregnancy is supposed to have advanced to the seventh or eighth month, it will be a proof that gestation has not advanced so far, though not decisive evidence that pregnancy does not exist, seeing that the developement of the uterus may have been arrested, by the death of the fœtus or some other cause.

Dr Montgomery next proceeds to consider those symptoms which may be ascertained by an examination of the uterus itself.

1. *State of the os and cervix uteri.*—After describing the state of the *os uteri* in the unimpregnated condition, the author points out minutely the successive changes which the part undergoes after conception. Other conditions of the organ besides pregnancy, however, may give rise to alterations, similar to those accompanying the earlier periods of gestation. Such are the near approach of menstruation, and, in a more marked degree, enlargement of the organ, either from an increase of its substance, or still more remarkably, from its cavity becoming distended by an accumulation of fluid within it, as blood or water, or by a diseased growth, such as polypus or hydatids. "Moreover, in some women, especially those who have borne several children, and are of relaxed habit, the condition of the *os uteri* is at all times such as may but too easily impose on us, its labia being soft, tumid, and undefined, and so much apart as to admit the point of the finger easily, especially during the time of, or just after menstruation." There is one fact, however, on which reliance may be placed, that, as pregnancy must always be accompanied by the changes in the *os uteri* alluded to, if we find in a doubtful case, especially one supposed to be of four or five months duration, that part retaining the same characters in the unimpregnated state, we may conclude with certainty, that the woman is not with child.

Dr Montgomery considers the indications furnished by the state of the *cervix uteri* to be the most important and least liable to error of any, as they enable us to ascertain the existence or non-existence of pregnancy, and in many instances determine with considerable accuracy the period of gestation. He objects, however, to stating the abbreviation of the cervix, in exact proportional parts, as little or no practical benefit can be derived from it. Such precision is not available in the examination of a living woman, where, from the variety in the length of the cervix, unless it had been measured before conception, it would be impossible to tell the exact proportion in which it had been obliterated. Besides this, the cervix yields much more slowly in some women than in others, especially in a first pregnancy.

Though this abbreviation cannot be looked upon as in itself furnishing sufficient evidence of pregnancy, it may be considered in general as a correct indication of the period to which pregnancy has advanced, if our judgment be assisted by a general review of all the rational and other signs which have been observed, and by carefully ascertaining the height to which the uterus has arisen in the abdomen.

2. *Size, situation, and consistence of the uterus.*—Passing over the author's accurate description of the size and situation of the uterus at different periods, with which our readers are sufficiently acquainted, we come to his account of the feeling which it communicates to the attendant.

> " The uterus within the first four months has the feeling of a soft, though pretty firm fleshy tumour, not sensitive when pressed, of a uniform smooth surface, and of such a size as would be without difficulty grasped in the hollow of the hand; after this period, that is the fifth month, it loses somewhat of its firmness and distinct feel, owing to its greater expansion and the consequent lengthening out of its fibres, which continuing to increase as pregnancy advances towards its termination, the circumscribed outline of the organ becomes less and less distinguishable; though generally to be detected by making pressure with one hand, while we examine with the other, in doing which we also ascertain some degree of obscure fluctuation, but in the same proportion as the parietes of the organ become indistinct, its solid contents are more easily felt, and even separate limbs may be recognized and traced: the firmness of the tumour, as well as the degree of fluctuation which it affords, will very much depend on the size it has acquired, or the natural firmness or suppleness of its structure, and on the quantity of *liquor amnii.* Owing to the variation in these causes a corresponding degree of difference will be recognized in its consistence in different instances, so that while in some persons it is so soft and yielding as hardly to be felt, in others it presents a degree of solidity amounting to absolute hardness, though still healthy, and retaining its round or oval form, and its uniform smooth surface."—Pp. 109–100.

When pregnancy is complicated with an anomalous state of the uterine contents, though the organ itself may be sound, its characters will differ from those described above. In one case narrated by the author, the uterus at the fifth month was of a scirrhous hardness, nodulated on its surface, and exquisitely painful. Profuse sanguineous discharges occurred during the whole period of pregnancy. The organ was afterwards proved to be healthy, though it contained matters not belonging to the ovum. Other instances of a similar nature are given. Whether irregularity of form and painful sensibility, with profuse and repeated discharges are to be received as diagnostic signs of such anomalous additions to the uterine contents, Dr Montgomery does not venture to determine. In some similar cases the uterus has been found to be in a morbid state.

Dr Montgomery next considers the different modes of examination, and the method of conducting them. The proper modes of applying the hand to the abdomen, of making examination *per vaginam* and *per anum*, of performing ballottement or repercussion, as he judiciously proposes to call the manipulation, and of applying the stethoscope, are clearly described, and some excellent practical directions given respecting them. In reference to auscultation, he makes the following remarks:

> "Without meaning to depreciate the acknowledged value of auscultation, as an occasional means of ascertaining the existence of pregnancy, I feel bound to state my opinion, that it will seldom be found necessary if the other more ordinary modes have been adopted with sufficient care; if we know how to make good use of our hands and eyes, we will not often require the assistance of our ears. There are, however, several other occasions in practice, in which auscultation may be applied with a different object; as when in protracted labour it becomes desirable to ascertain whether the child still lives. * * The existence of twins also may be thus discovered."—Pp. 125–6.

Dr Montgomery next notices the test proposed by Kluge and Jacquemin, the bluish tint of the vagina, extending from the *os externum* to the *os uteri*. According to the former physician, it commences on the fourth week of impregnation, continues to increase till delivery takes place, and ceases with the lochia. The latter describes it to be a violet colour, or like lees of wine, and so distinct as never to deceive him, "being sufficient of itself, and independently of the other signs of pregnancy, to determine the existence of that state." These statements are corroborated by Dr Sommer and Duchatelet. (Edin. Med. and Surg. Journal, Vol. xlvii. p. 226. The only condition, according to Dr Kluge, which is likely to vitiate the test, is the existence of hemorrhoids in a very marked degree. In some cases examined by Dr Montgomery, the existence of the purple colour was very obvious, in others it was so slight as to be scarcely if at all perceptible. Still, however, though his testimony is so far in favour of the sign, he considers it liable to the objections stated in the following extract.

"But supposing it a constant accompaniment of gestation, as asserted, it is obviously produced by the increased vascular determination or congestion existing at that time in the genital system, and hence we must anticipate the great probability that other forms of vascular congestion, independent of pregnancy, would cause the part to assume a similar appearance; an expectation which appears to be justified by facts. In a case lately seen by the writer, it became necessary to examine the vagina at the time of menstruation, and this purple hue of the mucous membrane was distinctly perceived. It is also well known that a common mode, long in use, of ascertaining whether certain of the lower animals are in a state fit for intercourse with the male, or in heat, as it is called, is to examine the orifice and internal surface of the vagina, which under such circumstances is found almost inky dark, as we find noticed by Mr Cruikshank. * * While, on the other hand, should the ovum be blighted, and the increased activity of the uterine circulation consequently cease, this colour of the vagina would most probably disappear altogether, or become very imperfect. It is, moreover, a mode of judging, which, even if proved to be infallible, would be totally inadmissible as a general means in practice. Such considerations must of course considerably modify the value of this test, but, nevertheless, should subsequent observations prove that healthy pregnancy is invariably accompanied by such an appearance, becoming visible within the first or second month, the fact would certainly be one of the most important additions ever made to our means of making a correct diagnosis in cases of early pregnancy, and the more especially as it would be applicable to a period, at which we have no other satisfactory means of discovering the existence of that condition, and might occasionally, under peculiar circumstances, be resorted to with propriety and advantage."—Pp. 127, 128.

Dr Montgomery concludes this part of his work by summing up the signs, to which reference may be made, at different periods of pregnancy.

"1st, Should the examination be required before the end of the third month, we have in general no sign or symptom on which we can place perfect reliance; but our opinion must be formed from the suppression or continuance of menstruation, the state of the breasts and areola, sickness of stomach, state of the *os uteri*. In a rare instance quickening may have taken place, or we may be assisted by the detection of some idiosyncrasies of the individual, or by her being conscious of exactly the same sensations as those which had been experienced at a similar period in her former pregnancies.

"2dly, In the fourth or fifth month, in addition to the above points of reference, we seek to detect the increased size of the abdomen and the uterine tumour, which is generally at this period well defined, and may be felt overtopping the anterior wall of the pelvis: the umbilical depression is beginning to diminish, and the fœtal movements have been most probably felt by the mother, or may be recognized by the hand externally applied, or by repercussion *per vaginam;* and the placental murmur may be heard. The *os uteri* is now much changed, as are also the breasts, on which we may expect to find the areola fully formed, and in some instances the peculiar mottled appearance already described; not unfrequently a lymphy or sero-lactescent fluid is found exuding from the nipple, or the extremity of this part is covered with little bran-like scales.

"3dly, In the sixth and subsequent months, the developement of the abdomen, and the size of the uterine tumour, within which we may be able to distinguish different parts of the child's body; the umbilicus raised to the level of the surrounding surface, or projecting above it, the patulous and otherwise greatly altered state of the *os uteri* and shortened cervix, above which we feel the bulging body of the uterus, and the head of the child lying against its anterior wall, if distinctly recognized, afford proofs which leave no room for doubt, which would of course be equally removed if we detected the phenomena derivable from auscultation.

"In investigations of this kind, an invariable rule should be, to collect every possible proof before we venture to pronounce an opinion; not trusting to the evidence of any particular sign or sympathy, however distinct, or whatever may be our faith in its value; but taking all the evidence together, and judging of it collectively and comparatively, except we have distinctly and unequivocally heard the pulsations of the fœtal heart, or felt the child *in utero,* which ought, of course, to be decisive of the question.

"Should the case be one into which legal considerations enter, whether of a civil or criminal character, and involving property, reputation or life, our decision ought to rest on no evidence that admits of doubt; and if we cannot have such proofs as will rigidly satisfy our judgment, and enable us to decide without hesitation. our uncertainty must be strongly and fearlessly expressed, and our decision postponed until a further lapse of time shall remove the obscurity of the case."—Pp. 128—30.

Dr Montgomery devotes a chapter to the examination of substances expelled from the uterus, such as an early ovum, moles, hydatids, and the membrane formed in dysmenorrhœa, and other conditions of uterine derangement.

1. *An early ovum.*—When this is expelled within the first month, its true character may fail to be detected. After this period it may be recognized by any one acquainted with the subject who will give the *necessary time* to its investigation.

Upon this last, Dr Montgomery very judiciously lays great stress, for we have seen conclusions drawn from a hasty examination at the time which further information showed not to have been warranted. "The ovum, when thus expelled, is generally infiltrated with firmly coagulated blood, and the pressure which it sustains, while it is forcing its way through the contracted and rigid cervix of the uterus, so condenses its texture, as to reduce it apparently to the condition of a solid homogeneous mass." The real structure of the body must be ascertained by immersing it in water for a day or two, the coagulated blood removed by agitation and washing, and the component parts gently separated *under water*, when its real character will be discovered. If a fœtus or a part of one be found, this of course will be decisive. This may not be the case, and yet the structure forming the other parts of the ovum, which can never be produced by disease, may be recognized. The characters by which these are to be distinguished are clearly stated by the author.

2. *Moles.*—After stating the various opinions which have been entertained by authors regarding the structure and formation of these productions, Dr Montgomery agrees with Mahon, that the existence of moles, properly so called, is extremely doubtful, since they may be all referred either to a placenta which had continued its growth after the fœtus had perished; to the degenerated remains of the after-birth; to coagulated blood; to sarcomatous tumours or polypi of the uterus. The first two cannot indeed exist independent of sexual intercourse; the other three may. This is of the greatest importance in medico-legal questions. The medical jurist would not be justified in pronouncing any mass expelled from the uterus to be a proof of pregnancy, unless he can detect in it a fœtus, or part of it, or some other of the structures of the ovum; and even then, the woman's chastity, if wife or widow, should not be doubted, since they may be the remains of a former abortion, which may not have been noticed. In the instances which have come under the author's observation, the women were either married, or avowedly indulging in sexual intercourse, and the expelled masses when examined were found to contain the product of conception degenerated, or altered by disease.

3. *Uterine Hydatids.* On this subject Dr Montgomery cites several opinions, the majority of which is in favour of hydatids being considered as the products of conception. His own belief is, that uterine hydatids do not occur except after sexual intercourse, and as a consequence of impregnation. He has never met with nor heard of an instance in which their presence was not accompanied or preceded by the usual symptoms of pregnancy. In every case which came under his immediate observation, the women supposed themselves with child, and when the contents of the uterus were expelled, a blighted fœtus, or some other part of the ovum, was recognized. It has been said that hydatids being formed in other situations, they may occur in the

uterus also without sexual intercourse. To this Dr Montgomery objects, first, that the hydatids produced in the uterus differ altogether from those found elsewhere, and, secondly, that they are never found except in connection with serous membranes, which do not exist in the uterus till the ovum, the membranes of which are decidedly serous, be deposited there. This appears to us to be decisive of the question so far as our knowledge goes. But it must be recollected that there is a possibility, though a very slight one, we admit, that it may afterwards turn out that hydatids may be produced by some other cause than that mentioned, and it may be prudent and humane in the meantime to give the accused the benefit of the doubt.

> " Again, in giving an opinion, we should be prepared to make allowance for such a case as this ;—a woman loses her husband by death or departure, when she is perhaps in the third or fourth month of pregnancy ; shortly afterwards she miscarries, and the placenta, or some other portion of the ovum is retained, and gives rise to the production of hydatids. This new product may be retained for many months, and being then expelled, might very unjustly excite suspicion against a perfectly chaste person ; for although the result of impregnation, in such a case, it would obviously be no proof of a pregnancy occurring subsequently to the absence of the husband. * * The occurrence of such cases renders it necessary to inquire how long may such formations be retained *in utero* before being expelled. In the cases which came immediately under the writer's own observation, they were not retained in any instance beyond seven months, but instances of much longer delay in their expulsion have been recorded by others."—Pp. 142–3.

Hydatids have been sometimes found to occur in the uterus in an otherwise healthy pregnancy. They have also been mistaken for ova.

4. *Membranes expelled in dysmenorrhœa, and other conditions of uterine derangement.*—Under this head, the author points out the characters by which such membranes may be distinguished from those of the ovum, and other collateral means, which enable us to form a judgment in such cases. The substance expelled, though produced by an action of the uterus analogous to that which forms the decidua, differs from it in two essential points, in being a morbid product, in not being intended, like the decidua, to become a medium of nutrition for the ovum, and in not being " furnished with such a structure as would be required for the performance of such an office ; hence it is then flimsy and very unsubstantial in its texture, of a dirty white or yellowish appearance when slightly agitated in water, devoid of the soft, rich, pulpy appearance, deep vascular colour, and numerous foramina for the reception of the nutrient vessels from the uterus, which are always so distinctly observable in the true decidua, which, however, in one point, it resembles, hav-

ing its inner surface smooth, and the outer unequal, but of a ragged shreddy appearance, unlike that of the healthy uterine decidua, and it is, moreover, entirely destitute of the little cotyledonous sacculi," which constitute "an essential character in the latter structure." Its texture more nearly resembles that of the reflex than any other structure, but it may be distinguished from it by no transparent membranes being found within it, or attached to it, and when it comes away entire, by there being no duplicature on itself.

"In far the greater number of instances this membranous structure is ejected by women who either are at the time, or have been affected with dysmenorrhœa, which distinction it appears necessary to make, because I have seen cases in which women who had got apparently quite well of that complaint, have afterwards expelled these anomalous formations, and that too under circumstances which led to a strong belief that they were miscarrying, the menses having been suppressed for two or three periods, and some of the mammary sympathies experienced. It should also be observed that the same thing has occurred to women who had not been at any time habitually affected with dysmenorrhœa; but in whom, owing to accidental circumstances, suppression and other equivocal symptoms of pregnancy have preceded the expulsion of the membrane. This has been most frequently observed in married women who have remained barren, but sometimes also this membrane has been ejected for two or three periods after parturition, and then entirely ceased. Under such conditions of functional derangement in the uterus, especially when the excitement is of an inflammatory character, women occasionally expel solid substances of a fibrous appearance externally, and varying in size from that of a fig to that of an almond, which they resemble in form, being in fact moulded to the shape of the uterine cavity. These substances when cut into are found to consist either of a condensed coagulum of blood only, and then are homogeneous or nearly so throughout; or some of them consist of layers of coagulum, between which there is interposed a thin membranous looking stratum of lymph; and others again are a combination of coagulated blood, with the membranous production first described, around which blood is effused and condensed before its expulsion from the uterus; in which case, when a section is made through the centre of the mass, it is found to consist of an outer coat of condensed coagulum lined by the membrane, the smooth surface of which is thus laid open. A case is described by Mad. Boivin, in which a similarly formed tumour was expelled from the uterus, but turned inside out, so that the smooth surface of the membrane was its external covering."—Pp. 146–7.

In the next chapter Dr Montgomery considers various accidental circumstances which occur during pregnancy, as the alteration of the features and expression of the face, and in the temper, strange appetites, and antipathies, pains in the teeth, face, and other situations, blotches on the face and other parts, change in the colour of the countenance, varicose veins, frightful dreams, &c., which may be useful as corroborative circumstances in after pregnancies, but never in the first. On the peculiar headach described by Beccaria, the author justly places no reliance. He exposes also the fallacy of what is very generally asserted, that the blood of pregnant women *always* presents the buffy coat, and other characters of inflammation. The peculiar deposit in the urine, which has been thought worthy of consideration by Foderé, and lauded by Nauche and others, has been put to the test in several instances by Dr Montgomery with the following results.

" In some instances no opinion could be formed as to whether the peculiar deposit existed or not, on account of the deep colour and turbid condition of the urine; but in the cases in which the fluid was clear, and pregnancy existing, the peculiar deposit was observed in every instance; its appearance would be best described by saying, that it looks as if a little milk had been thrown into the urine, and having sunk through it, had partly reached the bottom, while a part remained suspended, and floating through the lower part of the fluid, in the form of a whitish, semitransparent, filmy cloud. In some cases in which pregnancy was suspected, but did not exist, no such deposit was observed; but, it is superfluous to say, that there is such a host of accidental causes capable of altering the condition of the urine, as ought to make us very cautious, indeed, how we venture to attach credit to a symptom so equivocal." Pp. 157—8.

In reference to the pulse, all that the author believes can be with justice said on the subject is, that in pregnant women, especially in the earlier months, it is stronger and more rapid than is natural to the individual at other times. It is liable, however, to three objections, 1. that we cannot tell in any particular instance what may be the exciting cause of the increased action; 2. it may be natural to the person; 3. various diseases and accidents may produce it.

The vaginal pulse has been described by Dr Osiander of Göettingen as a very important sign of pregnancy. Owing to the new action going on in the uterus during gestation, the uterine artery is enlarged, and in a similar proportion the vaginal, the pulsations of which may be ascertained to be both stronger and harder, and its calibre greater than usual. During imminent abortion, and in other morbid states, he has found the vaginal pulse to be quicker than the radial. Dr Montgomery confesses that he has not put this to the test of experiment. He considers it, however, liable to the objections made to Dr Kluge's test, to which we have already alluded.

Dr Montgomery next adverts to certain conditions in which a woman may become pregnant, which render the case more obscure. These are early youth, or advanced age;—the existence of disease, especially of a kind calculated to prevent conception, or to render its occurrence very improbable—the want of consciousness in the woman of being placed in the circumstances to produce this result;—imperfect intercourse, &c.;—conception taking place when a woman having two ova in the uterus, one of them is expelled, and the other retained, and its vitality continued. These various conditions are discussed and illustrated by the author in a very satisfactory manner.

Dr Montgomery devotes a chapter to the consideration of the signs of pregnancy, which can be recognized on dissection, and enters at length into the disputed question of, whether a *corpus luteum* can exist without pregnancy? After considering the opinions respecting this promulgated by different authors of celebrity, he states his views in the following words.

> "I may be allowed to add the result of my own observations, which have been now continued through a period of nearly ten years, during which period, I never omitted a single opportunity within my reach for examining the bodies of women of all ages, and under all the varying circumstances of virginity, after intercourse, during gestation, and subsequent to delivery, at different periods from conception; these opportunities having been afforded by more than one large hospital, as well as in private practice. I have also dissected hundreds of the inferior animals with reference to this point, and have in my museum preparations of ovaries exhibiting the *corpus luteum* in different conditions in the human female, and also in cows, mares, sheep, sows, goats, bitches, cats, hares, rabbits; and my firm conviction is of the truth of both Haller's propositions, viz. that '*conception never happens without the production of a corpus luteum,*' and that '*the corpus luteum is never found in virgin animals, but is the effect of impregnation.*' It appears to me that those who have supposed, or asserted that they may exist without impregnation, and of course be found in the virgin ovary, have been led into the error by confounding appearances and structures essentially different, and, in fact, having only one character in common, which is their colour, altogether forgetting that 'every yellow substance in the ovary is not a *corpus luteum*'. It is allowed by those writers that 'the *corpora lutea* of virgins may in general be distinguished by their smaller size, and by the less extensive vascularity of the contiguous parts of the ovarum.' Now I have seen many of these virgin *corpora lutea* as they are unhappily called, and have preserved several specimens of them, but not in any one instance did they present what I should regard as even an approach to the assemblage of characters belonging to the true *corpus luteum*, the result of impregnation; from which they differ in all the following particulars.

"1. There is no prominence or enlargement of the ovary over them.

"2. The external cicatrix is almost always wanting.

"3. There are often several of them found in both ovaries, especially in subjects who have died of tubercular disease, such as phthisis, in which case they appear to be merely depositions of tubercle, and are frequently without any discoverable connexion with the Graafian vesicles.

"4. They present no trace, whatever, of vessels in the substance of which they are in fact entirely destitute, and of course cannot be injected.

"5. Their texture is sometimes so infirm, that it seems to be merely the remains of a coagulum, and at others appears fibro-cellular, like that of the internal structure of the ovary; but never presents the soft, rich, lobulated and regularly glandular appearance, which Hunter meant to express when he described them as 'tender and friable like glandular flesh.'

"6. In form they are often triangular, or square, or of some figure bounded by straight lines.

"7. They never present, either the central cavity, or the radiated, or stelliform white line, which results from its closure.'"—Pp. 244–5.

This last peculiarity, in common with several others observable in these spurious productions, even when connected with a Graafian vesicle, depends, according to the author, on the difference in the mode of their formation, which he considers to be effected in the following manner. In consequence of an accidental or morbid determination towards a vesicle, it is distended with fluid. This is either discharged or absorbed. In the former case there may be an external cicatrix, "but in both there is frequently deposited on the *internal surface* of the vesicle, a substance somewhat resembling the corpus luteum in colour, but in general not more than about one sixteenth of an inch in thickness, and entirely destitute of blood-vessels; sometimes it is very much thinner even than this, amounting to little more than a mere layer of colouring matter, lining the vesicle. In this condition, I have often found them, the vesicle being enlarged to three or four times its natural size, full of fluid, and its internal surface of a bright yellow colour, but when the vesicle collapses, either in consequence of rupture of its coats, or the absorption of the contained fluid, the inner surface of this new deposit closes upon itself, and forms an irregular line of junction, which is generally darker than the rest of the structure, and not unfrequently they present the yellow colour only on the circumference, while their centre is so dark as to be almost black; but from their situation they are entirely without lining membrane, to form either a central cavity, or white stellated line, which, in the true corpus luteum is formed by the closure of the inner coat of the vesicle; for the same reason also, these accidental formations are in general much smaller than the others, and they are moreover totally without vessels in their structure, so that, however minutely the rest of the ovary may be pervaded by fine injection, not a particle of it will pass into the bodies thus formed."—Pp. 246.

The appendix consists of three papers, on the period of human gestation, on the signs of delivery, and on spontaneous amputation of the fœtal limbs in utero. Regarding the first, he agrees with the opinion given in 117th page of the 27th Volume of this Journal. We quote his conclusions respecting the second.

"1. The signs of delivery are most distinct after the birth of a full-grown child; and least so, when the uterine contents have been expelled at an early period of pregnancy.

"2. The proofs are more distinct in proportion to the recency of the delivery, and any examination made after the lapse of ten days, from the time of the delivery, is not likely to afford satisfactory information; the most decisive signs, in general, disappearing within a week.

"3. The third or fourth day, generally, presents the results of delivery very distinctly, the condition of the breasts being then most remarkable, from the active secretion of milk.

"4. A first delivery is more easily detected than subsequent ones.

"5. We cannot, safely, rely on any of the signs of delivery viewed separately, but, must consider them collectively, their mutual relation and correspondence with each other, and with the other collateral circumstances of the woman's case and history.

"6. The chief points of attention ought to be the state of the uterus, the external parts, and of the breasts.

"7. There are certain physical signs which, when present, are sufficient to establish a negative decision; such are, for instance, a perfect hymen, or an imperforate state of the parts.

"8. But, on the other hand, a woman may have borne children, and no one mark remain, by which, the fact of delivery could be proved, after the lapse of even a few weeks.

"9. A woman may be delivered while in a state of insensibility, or even during deep natural sleep; so that her child may perish merely from want of attention, and without any moral delinquency on her part.

"10. A woman may be naturally pregnant, and the life of her child ascertained, and yet, child-birth may not occur; the child perishing and being decomposed, before the time of delivery."—Pp. 317–18.

The third paper in the appendix contains some curious cases of amputation of the limbs of the fœtus in utero, of which we formerly gave some account in our Medical Intelligence.

We take leave of the work, by expressing our conviction, that it merits a place in the library of every practitioner.

ART. VII.—*An Experimental Essay on the Relative Physiological and Medicinal properties of Iodine and its Compounds; being the Harveian Prize Dissertation for* 1837. By CHARLES COGSWELL, A. B. M. D., Member of the Royal College of Surgeons, Extraordinary Member of the Royal Medical Society of Edinburgh, &c. 8vo. Edinburgh, 1837. Pp. iii. and 179.

IN the 131st Number of this Journal, a short summary was inserted of the facts ascertained by Dr Cogswell, respecting iodine and several of its preparations. These are now published at length in the volume before us. Our intention, however, in noticing the work, is not again to enter upon the subject, but simply to recommend it to the perusal of our readers, as the most comprehensive monograph extant on the physiological and therapeutical effects of iodine and its compounds, containing as it does not only a digest of all which had been previously ascertained on these points, but much new and valuable information.

ART. VIII.—*Observations on the Surgical Pathology of the Larynx and Trachea, chiefly with a view to illustrate the affections of those organs which may require the operation of Bronchotomy, including Remarks on Croup, Cynanche Laryngea, Injuries by swallowing Acids and Boiling Water, Foreign Bodies in the Windpipe, Asphyxia, Wounds, &c.* By WILLIAM HENRY PORTER, A. M. Vice-President, and Professor of the Theory and Practice of Surgery in the Royal College of Surgeons in Ireland, Surgeon to the Meath Hospital and County of Dublin Infirmary, &c. &c. 8vo. London, 1837. Pp. viii and 280.

IN the 28th Volume of this Journal, an account was given of the first edition of the work before us. In this edition, Mr Porter has incorporated all the information which ten years' additional experience has given him, besides modifying and extending the descriptions of several affections, of the existence of which the stethoscope now furnishes certain indications, but which before could only have been conjectured by rational and frequently fallible signs. The chief additions will be found at the 32d, 44th, 48th, 59th, 71st, 91st, 116th, 133d, 139th, 177th, 200th, 208th, 213th, 225th, 230th, and 244th pages. Though consisting of the same number of pages, this edition, from the difference in the style of the printing, contains about a third more of matter.

In reference to Mr Porter's treatise the language of eulogy is unnecessary. There can be no doubt that it will continue to retain the high rank which for ten years it has held of a standard work on a most important part of surgical pathology.

ART. IX.—*The Speculum applied to the Diagnostic and Treatment of the Organic Diseases of the Womb; an Inaugural Dissertation presented to the University of Glasgow for the degree of Doctor of Medicine.* By JOHN BALBIRNIE, A. M. 8vo. London 1836, pp. xv. and 335.

Dr BALBIRNIE's work is one which sets at defiance every rule of composition. Interlarded as it is with quotations from the works of Greek, Latin, and French authors, and with exclamations and interrogations, confusing to the reader, every page contains gallicisms which would lead us to suspect that it is a patch-work of passages translated from French memoirs. The collocation of ideas, too, is frequently such as render the author's meaning unintelligble, and throughout the whole work a degree of pretending egotism is exhibited, which puts the patience of the reader to a severe trial.

The great object of the treatise is to advocate the use of the speculum in ascertaining diseases of the womb, and so far does the author ride his hobby, that there is scarcely an affection of the female organs of generation in which he does not recommend its employment. He states broadly, "that the practitioner is not competent to give advice on the diseases of the womb, nor to undertake their treatment, till, by a speculum examination, he has fully satisfied himself of the pathological condition of the organs he has to do with." The feelings of the patient he treats with great indifference, and seems to conceive it hardly possible, that any woman will refuse to submit to the most shameless exposure when merely requested to do so by her attendant. Knowing well the disgusting exhibitions which some French physicians, and especially Lisfranc, make of their patients in the hospitals, we could pardon a little obtuseness of feeling in one who had been their pupil for two years. The method of investigation, however, proposed in the present essay is by no means suited to the taste and sentiments of society in this country; and we trust that the time is far distant when the practitioner will have the audacity to demand, and the patient the indelicacy to submit to, the kind of investigation proposed by the author, except in cases of extreme urgency.

It is further a circumstance not calculated to recommend the practice of speculum examination, that it never can furnish accurate or complete information on the state of the entire organ on which the practitioner is called to give an opinion.

In placing on record our opinion of this work, we are actuated by the desire of preventing the introduction into this country, of that indelicacy of conduct and language, which is characteristic of more than one French physician of note, and which is not less degrading to the practitioner than injurious to the purity of the female mind.

As a specimen of the style, we give at random the following passage.

> "The ladies are not obdurate. Their character is to be 'gentle and easily entreated.' They will be reasoned with, and submit to what is reasonable. When it is their own best interests that are at stake, they will see the prudence and propriety of a timely submission to every means necessary for their cure: and the results of the investigation—the satisfaction and assurance of their own mind as to the nature of the disease, and a rational and successful treatment founded on it, will be to them an ample recompense for the painful sacrifice of their delicacy it for the moment exacted.
>
> "And we hope, that so far as regards ourselves, all that dignity and that delicacy of feeling which ought to distinguish the medical character, will be for us a solemn duty, and a solemn observance, never to be infringed, never to be compromised. If at any time the medical character should merge into, and invest itself with all the sanctity of the sacerdotal, it is certainly in such circumstances. He is for the time a high-priest—the alone privileged to enter into a *sanctum sanctorum,* whose recesses are not to be exposed to vulgar gaze, as its revelations are to remain buried in the depths of his own heart."—Pp. 19–20.

Dr Balbirnie seems to have anticipated censure, for he pleads in extenuation, that his work was sent to the press almost the day on which it was written. We cannot admit this as an excuse. There was no necessity for such haste. If hurried at first in submitting his manuscript thesis to the Senatus Academicus of the University of Glasgow, there was time enough afterwards to have improved it before venturing upon its publication.

Dr Balbirnie promises another work on the same subject, besides the one which he has announced, "on the use and necessity of copious and frequent blood-lettings in the commencement of acute diseases." We trust that he will in these avoid the errors into which he has fallen in the treatise now before us, and not again peril his professional and literary character by hurried publication.

PART III.

MEDICAL INTELLIGENCE.

PHYSIOLOGY.

1. *Instances of Longevity.* By Dr PRICHARD, (*from Researches in the Physical History of Mankind.* Third Edition, 1836. Vol. i.)

M. Quetelet informs us, that, at the commencement of 1831, there were ten centenarians in Belgica, of which fourteen were in the three provinces of Hainault, Namur, and Luxembourg. Limbourg and Eastern Flanders had each one, and there were none in the province of Brabant, Antwerp, West Flanders and Leige. The three oldest of these centenarians were aged 104, 110, and 111. They belonged to Luxembourg: the others did not exceed 102 years.

Haller made a collection of facts relating to longevity, and obtained notices of upwards of one thousand individuals, who exceeded their 100th year. Of these sixty died between the 110th and 120th year, twenty-nine were between 120 and 130 years old, fifteen between 130 and 140 years; and seven exceeded this last term, of whom one lived to be 169 years old.

Mr Easton of Salisbury, in a curious work on longevity, has collected notices of one thousand seven hundred and twelve persons who exceeded their 100th year, and from these the following table has been deduced.

Of males and females who lived from 100 to 110 years, (both inclusive,) the instances have been 1310.

Above 110	to 120	227
120	130	84
130	140	26
140	150	7
150	160	3
160	170	2
170	180	3

The following is a collection of instances of very advanced ages by the same writer.

Apollonius of Tyana,	in A. D. 99	aged 130
St Patrick,	491	122
Attila,	500	124
Llywarch Hên,	500	150
St Coemgene,	618	120
Piastus, King of Poland,	861	120
Thomas Parr,	1635	152
Henry Jenkins,	1670	169
The Countess of Desmond,	1612	145
Thomas Damme,	1648	154
Peter Torton,	1724	185
Margaret Patten,	1739	137
John Rovin and his wife,	1741	172 and 164
St Mongah or Kentigern,	1781	185

Beyond the limits of Europe there are numerous instances of well authenticated longevity. Baron Larrey states, that there were at Cairo, thirty-five individuals upwards of 100 years of age.

It has often been related, that the Cenobites of Mount Sinai live not unfrequently to the age of 110 or 120 years.

Old men are mentioned by travellers in Arabia, Barbary, Syria, and Persia, to exceed not unfrequently 100 years of age.

The following are instances of longevity, collected by Dr Edmund Fry, which occurred in America, or the British Colonies, in persons either of European descent, or born in Europe, but resident abroad during the greater part of their lives.

Mr C. Cotterel died at Philadelphia, aged 120 years and three days, afterwards his wife, aged 115, after living together ninety-eight years.

At Laurens district, South Carolina, died Mr Solomon Nibel, aged 143 years, emigrated from England in 1696, aged 19.

At Campbell, Virginia, died in 1821, Mr C. Layne, aged 121. He was born in Buckingham county in 1700. He has left a widow aged 110, and a numerous and respectable family to the fourth generation.

In Fairfax county, Robert Thomas, aged 107, died in 1821. At Bow, in New Hampshire, in 1823, died Samuel Welsh, aged 112 years and seven months.

Died at Spanish Town Jamaica, November 21, 1829, Mrs Judith Crawford, aged 150 years; she retained her bodily strength, and her faculties, until within a few days of her death. She remembered the earthquake in 1692.

Died at Goshen, in Union District, South Carolina, July 1630, Samuel Selby, upwards of 101 years of age.

Died at Mount Grace, in Jamaica, December 1830, Mrs Mary Innes, aged 110 years.

Died in the Island of St Helena, in September last, Mrs Elizabeth Honoria Frances Lambe, aged 110 years and 4 months. In the year 1731 she was housekeeper to General Pike. She was married eight times, and left many descendants, of whom two hundred and sixty yet live. " She Died in full persuasion, that the Millennium will happen in 1836, and that the charter will be renewed to the East India Company."

In reference to the longevity of negroes, the following instances are collected from a variety of sources.

December 5, 1830, died at St Andrews, Jamaica, the property of Sir Edward Hyde East, Robert Lynch, a negro slave in comfortable circumstances, who perfectly recollected the great earthquake in 1692, and further recollected the person and equipages of the Lieutenant-Governor, Sir Henry Morgan, whose third and last governorship commenced in 1680, viz. one hundred and fifty years before. Allowing for this early recollection the age of ten years, this negro must have died at the age of 160 years.

Died at Kingston, Jamaica, Catherine Lopez, a negro woman, at the age of 134 years.

Died April 6, 1821, at Fellowship Hall, Jamaica, Margaret Darby, a free black woman, at the age of 130 years. She retained all her faculties to the last moment.

Died at Frederick Town, North America, in 1797, a mulatto man, said to be 180 years old.

Died in Spanish Town, Jamaica, December, 20, 1820, a negro woman, named Mary Goodsal, at the age of 120.

Died February 17, 1823, in the Bay of St John's, Antigua, a black woman named Statira. She was a slave, and was hired as a day-labourer during the building of the gaol, and was present at the laying of the corner-stone, which ceremony took place one hundred and sixteen years ago. She also stated, that she was a young woman grown, when the President Sharpe assumed the administration of the island, which was in 1706. Allowing her to be fourteen years old at that time, we must conclude her age to be upwards of 130 years.

April 7, 1827, died at Falmouth, Jamaica, Rebecca Tury, a black woman, at the age of 140 years, as correctly traced from the deeds of her owners. She retained her faculties to the last.

Died in South Carolina, Tom, a negro man belonging to Mrs Bacon, at the age of 130 years.

At Jamaica, November 10, 1830, died Frances Peat, a black slave of Kingston, aged 130, leaving many descendants to the fourth generation.

Died October 12, 1830, in Jamaica, aged 120 years, Jane Morgan, a negro woman, formerly belonging to George Crawford Ricketts, Esq. Attorney-General of this island.

Juan Moroygota, a native of the parish of Tabio, of the Canton of Cappaquina, who completed his 138th year on the 12th of June 1828. At this advanced age he enjoys perfect health, and works every day as an agricultural labourer.

Died in Jamaica, 1821, Joseph Sam, a negro belonging to the estate of Morice Hall, at the age of 146.

September 3, 1631, in Jamaica, died a Creole negro woman, named Catherine Hiatt, formerly belonging to the Honourable John Hiatt; she frequently said she was a good sized girl at the insurrection of the Coromantee negroes, in Carpenter's Mountains, Clarendon, which happened in 1690; from this, her age is computed to have been upwards of 150 years. She never bore a child: she retained all her faculties to the last moment, and did coarse needle-work a very short time previous to her death.

September 8, died in Jamaica, Frances Johnson, a Samboo woman slave, aged 107 years, retaining all her faculties to the last.

PATHOLOGICAL PHYSIOLOGY.

On the Deleterious Effects of the Introduction of Air into the Veins during various Surgical Operations; with some remarks on the Mechanism of this Accident. By JOHN C. WARREN, M. D. of Boston. (From Surgical Observations on Tumours. Boston, 1837.)—It is now some years since the attention of surgeons was directed, by various occurrences in the Parisian hospitals, to the speedily deleterious effects of the admission of air into the veins in various operations about the neck. Since the time when the first well-observed case of this accident was recorded by Magendie* in 1821, several similar occurrences have been observed by others; and as it is one of the most sudden and rapid modes of the suspension of the vital functions of respiration and circulation, the theory of its mechanism and operation, and the most probable means of counteracting its occurrence, have engrossed proportional attention.

These effects are nowhere more clearly and forcibly illustrated than in the following case recorded by Dr Warren.

Nancy Barker, of Trenton, in Maine, married, her age thirty-three. Three years since, she noticed an induration in the right breast, which increased till it involved the whole gland in a tumour, very hard, moveable, yet connected with the pectoral muscle by a morbid adhesion. The nipple was drawn in. The axilla is occupied by a considerable tumour, of a globular form, and quite hard. An operation was performed on the 24th of December 1831.

The patient sat in a chair. The right arm was extended, raised above a horizontal line, in order to give tension to the skin, and permit access to the arm-pit, and was supported in the position by an assistant. The skin on the surface of the breast, with the diseased nipple, were included in an oval incision. The breast was dissected from the pectoral muscle, and left connected with the axillary glands, while the extirpation of these glands was effected. As they adhered to the great axillary vessels, they were cautiously detached by dissection, and by insinuating the finger where the cellular substance was loose, between the tumour and the great vein, this separation was nearly effected—only a slight connection still existing at either extremity of the tumour. Proceeding to separate it, at the outer part of the axilla, a vein was divided, and a small quantity of venous blood discharged. Scarcely was this done, when the patient struggled, her complexion changed to a livid colour, and at the same instant, a bubbling or gurgling noise, which had not been noticed before, was heard, though indistinctly; but the place from which it issued was not visible, the surrounding skin and fat lying over it. On this, the axilla was immediately compressed. The patient became insensible, breathing as in apoplexy. The tumour was at once separated. The posture of the patient was changed, and she was supported by those around. Some brandy was poured down the throat, and ammonia introduced into the nostrils. The pulse, however, became less distinct every instant. Cloths dipped in hot water were thrown over the extremities. Strong frictions were applied to the chest, and to all parts of the body. Considerable quantities of brandy were again poured down the throat. At this moment, the livid colour of the cheeks gave place to a suffusion of vermilion red—and no glow on the cheek of a youthful beauty ever gave one so much pleasure, as that flush. But the flush soon passed off; the lividness reappeared; the respiration became more feeble; the pulse at the wrist scarcely perceptible; and notwithstanding the redoubled applications of external heat and moisture, the extremities and the whole body cooled rapidly, and presently the respiration ceased. As a last effort, the larynx was opened, and the inflation of the lungs, by a bellows, was put in operation in a speedy and perfect manner, imitating the movements of inspiration and expiration, with great exactness—continuing at the same time the general application of heat and friction to the whole surface.

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* Journal de Physiologique Experimentale, Tome i. p. 190. Paris, 1821.

These measures were employed for about twenty minutes longer. At the end of this time, there was no remaining hope of the restoration of the patient to life. The friends being anxious to take advantage of a vessel then sailing for their home, the body was soon after removed, and no opportunity afforded for examination.—Pp. 259-261.

An example not less formidable, though less fatal, of the same accident, took place in the following case, also recorded by Dr Warren.

William Burrill of Salem, aged 60, was admitted into the Massachusetts General Hospital, on the 16th October 1830, with a hard scirrhous tumour. three or four inches in diameter, on the left side of the face and neck, of a livid red colour, very painful, ulcerated in the centre, emitting an offensive smell, and involving apparently the parotid, submaxillary, and sublingual glands, and all the soft tissues. The operation of removal was undertaken with the preliminary intention of inclosing the carotid artery in a ligature, in the following manner.

The platysma muscle was divided; the edge of the mastoid exposed and dissected. Thus far, only a few drops of blood were discharged. The face of the sheath of the great vessels was a little uncovered, when a small effusion of venous blood appeared under the knife, and checked the operation. At that instant a very distinct sound was heard, like the passage of air through water. A few bubbles were seen in the venous blood, the flow of which was immediately arrested by applying a finger on the part. The patient exclaimed, 'I am faint.' On regarding his countenance, it was not pale, but livid, almost black, and the muscles agitated by a convulsive motion. The respiration became deep, laboured, and stertorous, like that of apoplexy. The pulse being examined at the wrist, was found distinct, but very slow.—The wound not bleeding, and very little blood having been lost, the temporal artery was opened, and the blood flowed from it with great freedom. As it flowed, the respiration became more frequent and less laborious—the pulse at the wrist more natural. The leaden colour in the cheeks assumed a reddish tinge, and the alarming character of the symptoms was evidently diminished. About twenty minutes elapsed during these changes. At the end of half an hour, it was thought safe to remove the patient to his bed, where he lay in a state of insensibility for two hours, at the expiration of which, he awaked as from sleep, still breathing like an apoplectic. The night was passed without any accident, and on the following morning he was as well as usual, with the exception of a moderate soreness over the thorax, and some headach.—Pp. 299–300.

In this case the symptomatic effects of the introduction of air into the venous system were much less intense and violent than in the last-mentioned case. It is further important to mention, that in seven days after the accident now described, the operation of removing the tumour was performed without tying the carotid artery, in the following manner.

The diseased parts were surrounded in an elliptical incision, extending from the lobe of the ear to the upper part of the neck, and including the submaxillary, the sublingual and parotid glands—all of them in a morbid and disorganized state, and they were all entirely removed. The hemorrhage was copious, but readily arrested, with the exception of that from the facial vein, which, from its depth, under the jaw, could not be distinguished so as to admit the application of a ligature, and was therefore compressed by a sponge. The veins below the wound were compressed during this operation. The patient experienced a slight faintness, which soon passed off. He had no bad symptoms; and on the 10th of December, the wound being nearly healed, he requested his discharge, which was granted.

The vein wounded was a small vein which crosses the artery from one of the thyroid veins to the internal jugular. I have noticed it in almost every operation on the carotid since the above, and presume it has often been divided in this operation without any bad consequence. It should, however, be avoided, not only on account of the danger of the introduction of air, but because it causes a flow of blood from the upper part of the wound, and thus interferes with the dissection of the carotid artery.—Pp. 300-301.

Dr Warren subjoins to the first of these cases some considerations, *first*, on the manner in which the air gains admission into the veins in surgical operations; *secondly*, on the mode in which it influences the functions and causes death; *thirdly*, on the means of prevention; and, *fourthly*, on the remedies to be employed when the accident has occurred. Though in these remarks he follows the views given by Magendie, it may be useful to notice them.

On the first point, viz. the manner in which air gains admission into the veins, he directs attention to two circumstances, the state of the heart, and the state of the affected vein. The heart, he argues, has a dilating as well as a contracting power; the auricles, he maintains, dilate by an active power, and suck the blood from the neighbouring veins; and by this suction of the right auricle, the air may be drawn in at the opening in the wounded vein. We are aware that this is a fashionable doctrine, but to us it appears to be an inaccurate one. There is, we conceive, strong reason to doubt the suction power in the right auricle, and even its active property of dilatation. This suction power seems to be nothing else than the emptying of the auricle, by the ventricle propelling the blood into the pulmonary artery, and the latter favoured most powerfully by each inspiration, and the consequent dilatation of the walls of the chest. Though the ventricle were not to propel the blood very forcibly into the pulmonary artery, that fluid would nevertheless find its way into this vessel during inspiration, which has the effect of not only drawing air into the lungs, but urging the blood into the branches and minute divisions of the pulmonary artery. This is abundantly proved by the first inspiration in the fœtus, and by the fact that in many animals there is no pulmonic heart. "We know," says Magendie in the memoir already referred to, "that at the moment when the chest is dilated to draw the air into the lungs, the blood of the principal veins is also drawn towards the heart, and rapidly urged into its chambers. This phenomenon is easily seen in the jugular veins of persons with lean necks, and even in animals in the large venous trunks, and in the veins which end in them." With regard to the property of active dilatation, it is entirely an assumption. The dilatation of the right auricle, which, it is to be remembered, is by no means very muscular, is the simple result of the cessation of contraction.

The second circumstance demanding attention in the explanation of this phenomenon is, as first pointed out by Magendie, and now by Dr Warren, the condition of the vein or veins. The coats of the veins are flaccid; and in their ordinary state the effort to suck air at any aperture would be followed by collapse of the venous walls, and the introduction of air in this mode would be impracticable. To this may be added, that the incumbent parts being soft and compressible, the external air compresses them, and consequently the venous walls sufficiently, to cause complete collapse. If, on the contrary, the coats of the vein are prevented from collapsing by adhesion to some hard unyielding substance, as in the case of a firm tumour or a bone, or even where it is firmly tied to another venous trunk or branch by the peculiarity of its situation, then air may be introduced and carried through it without difficulty. If a suction hose be composed of thin skin, water cannot be drawn through it, but if it be covered with metal, to which it adheres, there is no obstacle to the process of the introduction of air by suction.

In order that air may be sucked by a vein, observes Dr Warren, in the living body, its coats must be prevented from collapsing, and this may be done by different causes. 1. By position. If the arm, for example, be extended to the utmost degree, the axillary vein will at the time be in a state of tension; and should an aperture be made in it in that situation, the vein would be prevented from collapsing, and air might be drawn in. 2. If the vein passed through and adhered on the outside to a firm tumour, it would equally be kept open and prevented from collapsing. 3. If the vein were attached to fascia, which is again attached to periosteum or bone, it would also be prevented from collapsing, and might in the same mode introduce air. And 4. in peculiar situations, as a short venous trunk placed between two others, to which it is more or less firmly fixed; for instance the transverse jugular veins, which pass from the anterior to the middle jugular veins. In either of these cases, Dr Warren thinks, especially in points near the heart, there is no difficulty in explaining the entrance of air into the veins, and its progress to the heart.

The mode in which air introduced in this manner into the vascular system deranges, and sometimes interrupts, the vital functions, is not so easily understood.

The organs supposed by different persons to have been mostly affected are the lungs, the brain, and the heart. The lungs have been found to contain air in their vessels; and as the phenomena bear a resemblance to those of asphyxia, these organs have been with reason believed to be the primary seat of derangement. The livid appearance of the skin, and the gurgling noise within the chest, have been believed favourable to the same view.

The brain has been by others supposed to be most affected by the introduction of air into the blood-vessels, and in favour of this notion there are not a few facts and opinions. Thus Brunner found an aëriform fluid in the cerebral vessels of two apoplectic subjects. Morgagni records the case of an Ethiopian who, while enjoying himself at breakfast with his friends, suddenly expired, and in whose body, inspected twelve hours after death, the blood-vessels of the cerebral membranes, the basilar artery, the other vessels of the surface of the brain, and the *arteriæ callosæ*, were distended with air mixed with serum and little blood. In the same letter he mentions an instance of a Venetian fisherman, also surprised by sudden death, and in whose vascular system, both venous and arterial, were found air-bells in abundant quantity.

These circumstances, with the known effects of injections of air into the veins by Harder, Bohn, and others, and the opinion of Lancisi and Boerhaave, seem to have led Bichat to maintain the opinion, that air introduced into the vascular system proves fatal, by deranging and interrupting the functions of the brain. His other reasons for this opinion, besides that now mentioned, are the following;—1. The heart continues to beat after this kind of death, after the animal life and the action of the brain has ceased to act. 2. Air injected into the carotid arteries causes death, with analogous phenomena, excepting the agitation of the heart, which is caused by the contact of the air in the parietes of the organ. 3. When an animal dies by blowing air into the veins, the left chambers of the heart, as well as the right, are filled with frothy blood. 4. When air is injected into one of the divisions of the portal veins, it passes with difficulty into the capillary system of the organ; and after oscillating in the large trunks, it reaches the heart late, and only after a considerable interval appear those symptoms which ensue immediately when the air enters one of the veins of the large system, because then the heart transmits it immediately to the brain.

In the cases which occurred to Dr Warren the sudden loss of sensibility, the slowness of the pulse, and the heavy respiration, appeared to him to indicate pressure on the brain. Though Bichat denies this pressure, he maintains that the presence of air in the cerebral vessels is sufficient to annihilate the functions of the organ.

This doctrine of the suspension or extinction of the functions of the brain by the admission of air into the venous system was first controverted by Nysten. Pechlin and Sylvius had, in opening the body of a man who died under symptoms of pains in the belly, and great anguish at the breast, found the heart and veins considerably distended with air, and containing little blood;* and a similar case is given by Henry Graetz† and by Ruysch.‡ Founding upon such facts as these, Nysten maintained that it was not the brain which first suffered, and undertook a series of experiments to ascertain the mode in which death is produced. From these he drew two conclusions; the first, that air injected into the venous system of animals causes death by distending excessively the *parietes* of the right chambers of the heart, and preventing them from contracting, in order to impel into the pulmonary artery the blood contained in them; and that death consequently commences by the pulmonary heart; and the second, that when injected in such moderate quantity, or at such intervals as to obviate the distension, it proves fatal more slowly, but not less certainly, by inducing a species of embarrassment in the circulation of the pulmonary artery with *peripneumonia notha*, or vesicular *bronchitis*, and that death in this case commences by the lungs.

This notion, that is to say, the former of the two, since it is chiefly to the sudden introduction of air that all the phenomena in the human body relate, is the one espoused by Magendie, who, after remarking the collapsing faculty of the veins in ordinary circumstances, and the influence of any cause which should prevent this collapse, adds, air introduced in certain quantity suddenly into a vein almost immediately causes death, because it is accumulated and rarefied in the cavities of the heart, prevents their contraction, and thus arrests the circulation. This explanation certainly appears to accord most easily with the phenomena of the accident, and above all to explain the suddenness with which the patient feels himself deprived of respiration and consciousness. The expressive manner in which the locksmith described by Magendie, as suddenly attacked amidst the operation, exclaimed, " the blood is out of my body. I am gone," while the man became stiff, unconscious, and was covered with a cold sweat,—and the strange sound which was heard within the chest, all seem to point to a lesion of this side of the heart and the pulmonary artery, taking place in the manner specified. The same phenomena also were remarked, excepting the articulate expression, in the case of the horse bled by M. Bouley. Does not the air admitted cause coagulation of the blood?

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* Observat. Physico-Medica, Obs. lvii. p. 135.

† De Hydrope Pericardii.

‡ Ruysch, Op. Omnia. Leydae, 1737, Responsis ad Vaterium.

The means of prevention must be regulated by the knowledge of the mode in which the accident takes place.

The veins most likely to be the seat of the accident are those near the heart, viz. the anterior, middle, and posterior external jugular veins; the internal jugular, subclavian, axillary, and their collateral veins. The external iliac and even the saphaena vein, when enlarged and indurated, may also become the seat of the accident. When surgical operations are performed in the vicinity of these vessels, or when they are to be wounded necessarily, Dr Warren recommends the surgeon to observe the following cautions.

1. He will avoid implicating the veins named above, until the latest period of his operation, in order that he may have a better opportunity of compressing them. 2. He will, if possible, cause such veins to be compressed between his incisions and the heart. 3. When he sees a stream of black blood issuing under his knife, he must suspend his operation till he has ascertained whether air is drawn in. 4. The instant he perceives the peculiar sound of air passing through a narrow aperture, he makes compression on the wounded part, and abandons the operation, unless he is able to compress the vein between the wound and the heart. 5. In dissecting near those veins, he must avoid that posture which gives strong tension to the vein. In the axilla, for example, if the axillary vein happens to be wounded while the arm is extended and elevated, air may be drawn in; but if the vein is wounded when not in a state of tension, air will not enter. 6. When the operator is compelled to divide any of those veins, he desires the patient to make a full inspiration before his incision.—Pp. 266, 267.

When the accident has taken place, or if during an operation the patient faint, the surgeon should carefully compare the symptoms with those produced by syncope, as air may be admitted without notice. If the surgeon is satisfied that the suddenness of the attack indicates the occurrence of the accident, then Dr Warren advises to proceed as follows.

If the pulse is slow and suffocated, the patient not having lost much blood, the temporal artery is to be opened, and blood abstracted, varying in quantity according to the effect of the abstraction. On the other hand, if much blood has been lost, and the pulse is very low, stimulants must be employed. Cold water is to be dashed in the face, and ammonia applied to the nostrils; and if the patient can swallow, this medicine is to be taken into the stomach; if not, it must be thrown in by a syringe. Frictions must be applied to the extremities; and blankets, wrung out of hot water to every part of the body. Should these means fail of success, artificial respiration must be resorted to, by introducing a tube into the glottis, or through an aperture between the thyroid and the cricoid cartilages. When no better instrument is at hand, common bellows may be used. The efforts should be continued long and steadily—say from half an hour to an hour.—Pp. 267, 268.

Of the attempt to withdraw the air by the syringe, Dr Warren justly disapproves. In short, the great object must be to keep up the action of the right ventricle, till the air is absorbed by the blood; and as this is more readily effected if the quantity be small than great, the next object is to prevent the entrance of more air.

MATERIA MEDICA AND THERAPEUTICS.

Medical Observations and Contributions on Salicine; with comparative Observations on the merits of Sulphate of Quinine and Piperine. By Dr P. J. Blom; translated from the Dutch with observations by Dr Salomon of Hildesheim. Potsdam, 1835.—In this valuable monography, originally written in Dutch by Dr Blom, and afterwards translated into German by Dr Salomon of Hildesheim, the former author has made a series of useful observations on the physiological and therapeutic effects of salicine, the alkaloid basis of the bark of the different kinds of willow. Dr Blom ascribes to salicine a peculiar operation on the mucous membrane, the tone of which it elevates, and the secretion of which it improves. He employs it chiefly in intermittent fevers, mucous fevers, worm fevers, and those of dentition. For the extinction of pure quotidian and tertian fevers he used it during the intermission at the rate of 20 grains in four doses, and in quartan fevers, at the rate of 30 grains in 6 doses, so that he gave it from four to six half hours before the commencement of the febrile symptoms, upon which either the fever ceased, or made a feeble attack, which in like manner, or by means of a small dose, was prevented.

In remittent fevers Dr Blom administered salicine in the remission, especially in patients with feeble digestion and of phlegmatic temperament, in any aromatic water, in slight gastric symptoms with extract of couch-grass.

In hectic fevers it diminishes the profuseness of the sweatings.

What Dr Blom states on the therapeutic use of the sulphate of quinine and piperine in comparison with salicine, deserves attention; 1. in intermittent fever; 2. in fevers with inflammatory character; 3. in fevers with predominant affection of the nervous system; 4. with predominant lesion of the secretion; 5. with bad condition of the fluids on the organization of the *viscera*; and 6. in marked intermittent fevers.

In relation to the first tribe of maladies he makes the following remarks. *a.* The sulphate of quinine merits the preference in those intermittent fevers which are the consequences of catarrhal or rheumatic causes, or are complicated with catarrh or rheumatism. *b.* The sulphate of quinine further deserves the preference in the forms denominated *subintrant* and *subcontinuous,* in both cases, for this reason, because it exerts greater influence on the action of the cutaneous vessels, promotes transpiration, abridges the stage of feverish chill, and by this action on the skin, in the latter case, is more easily borne. And, therefore, we must give also the sulphate of quinine the preference, when we wish by large doses, immediately before the accession, to remove the fever, for instance in the case of an obstinate quartan, in which in the apyrectic interval, the appetite is very good; since in such patients we not unfrequently see, after the use of the salicine or piperine, the fever indeed remit, but at the same time a new gastric affection be developed. *c.* A contraindication to the employment of sulphate of quinine Dr Blom has invariably found in feeble patients disposed to profuse sweating, and also in plethoric persons who, during the accession, and particularly for a long time after it, presented symptoms of violent congestion of the head, and had intense headach. In both these cases the author uses with advantage salicine, which, in feeble persons and those prone to sweating, in moderate doses, not only improves digestion, but prevents also excessive diaphoresis; and in the case of tendency to vascular congestion to the head and violent headach, the author observed no detriment thence, though in doses of from 6 to 8 grains daily. *e.* The same contraindication, which is mentioned under (*c*) the third head, as to quinine, is applicable also to the use of piperine, but it deserves to be commended, *f.* in the phlegmatic temperaments in which a sluggish circulation feeble digestion, and general languor are observed, in which class of cases piperine acts more penetratively, and propagates its operation further than either sulphate of quinine or salicine. *g.* Piperine as well as salicine deserves accordingly the preference in those patients who often suffer from intermittent fevers, or are exposed to frequent relapses, and in whom, on account of the manifold use of sulphate of quinine, it is often necessary to advance to very large doses of these agents, in order to subdue the fever. Here the system appears often to require another stimulus to which it has been less habituated. *h.* Not only in general debility, but also in feebleness of the digestive organs, salicine and piperine deserve to be preferred before the sulphate of quinine. At least they are not only better endured by the stomach, but they also strengthen the organ in a greater degree. *i.* In those forms of fever, in which either from their long duration, or a depraved state of the fluids, inflammations or irritation of the liver or spleen begins to be developed during the febrile accession, the sulphate of quinine corresponds to our indication to dislodge the fever, and causes a contrary action in the cutaneous vascular system, by which the inflammation is dissipated at the cessation of the fever. *k.* In those fevers in which incipient symptoms of dropsy are remarked, the sulphate of quinine is better than salicine and piperine, especially when the patient is cachectic or of a phlegmatic temperament, with general weakness, in which cases also salicine and piperine are beneficially employed.

In the second class of affections, salicine is employed when the inflammatory character is past, and the fever has assumed rather the lingering aspect of mucous fever, when the tongue is loaded with viscid mucus, and the patient has a phlegmatic temperament, then piperine and salicine promise more advantage than sulphate of quinine.

In the third tribe the sulphate of quinine only is recommended.

In the fourth tribe, the author recommends salicine only in the advanced stage of mucous and worm fevers, when the irritation is over, or a sluglish, rather passive than active state of the mucous membranes is present. In both cases, the author witnessed the best effects from salicine, not only in the speedy secretion of mucus, and strengthening of the mucous membrane, but also the febrile phenomena remitted much more speedily after the use of the same than after the use of sulphate of quinine. When with this is connected a general corporeal weakness, an inert actionless state of the other organs, a completely prostrate state of the digestion, the author believes, on the other hand, that piperine should be preferred to salicine, especially when the general feebleness or that of the stomach is connected with no excessive sensibility; when the sensibility is very great, especially in weak females, the piperine is as little to be preferred as the sulphate of quinine, while the salicine is advantageously employed. In slow nervous fevers, also, that is mucous nervous fevers, (*Febris mucosa lenta, s. mucosa nervosa*) the author has derived great advantage from the use of the salicine, without observing that it exerted any unfavourable influence on the vascular system.

In the fifth tribe, Dr Blom employs in fevers with depraved state of the fluids the sulphate of quinine, on account of its great antiseptic power, in preference to the salicine. In the latter case, in any disorganization of the *viscera*, on the other hand, the salicine is more efficacious, especially when hectic fever, by the profuseness of the night-sweats, undermines the strength of the patient. Salicine accordingly operates here not so much on the disorganised *viscera*, as the sulphate of quinine in the first case in the depraved state of the fluids, but only at the most in the hectic fever connected with this disease, the bad digestion, and the mucous state of the alimentary canal. Under all circumstances, the piperine should be postponed, since it possesses neither the antiseptic power of the sulphate of quinine, nor the tonic power without general irritation of the salicine.

In the sixth tribe, viz. that of masked intermittent fevers, the author has hitherto made no use of piperine, but only salicine, which here was quite similar in effect to the sulphate of quinine. In the meantime, when a rheumatic or catarrhal cause, or any complication with the diseases can be recognized, he has always used only the sulphate of quinine.

MEDICAL STATISTICS.

1. *Result of experiments on the Weight, Height, and Strength of about 800 Individuals.* By Professor Forbes, *(From the Edinburgh Philosophical Journal, Vol.* 22d—Ap. 1837.*)* 1*st*. In respect of weight, height, and strength, there is a general coincidence in the form of the curves with those of M. Quetelet. 2*d*. In Britain, the progress towards maturity seems greater in the earlier years (14 to 17) than in Belgium, and slower afterwards. This seems more strongly indicated in the English than in the Scotch curves. 3*d*. The superior physical developement of natives of this country above the Belgians is very marked. In strength it is greatest, (fifth of the whole,) in height least. 4*th*. So far as the English and Irish curves can be considered as correct, they indicate that the English are the least developed of the natives of Britain at a given age—the Irish most, the Scotch retaining an intermediate place. 5*th*. The maximum height is barely attained at the age of twenty-five. 6*th*. All the developements increase during the period of observation, (fourteen to twenty-six years of age) and all increase *more* slowly as age increases. Hence the curves are all convex upwards, (the abscissæ or age being projected horizontally.)

2. *Proportion of recoveries among the Insane in different establishments.* By W. A. F. Browne, Esq., *Surgeon, Medical Superintendent of the Montrose Lunatic Asylum. (From Asylums as they were, are, and ought to be,* 1837.)

No. years in which the average is taken.	*Hospital.*	*Proportion of cures in 100.*
25	Senavra, Milan,	58
2	Charenton, Paris,	40
12	Salpetrière and Bicêtre,	34
12	Ivry, Paris,	51
13	Retreat, York,	50
16	Lancaster,	40
8	Gloucester,	48
—	York, (County Asylum)	49
5	Bethlem, 1748-1794,	28
1	Bethlem, 1813,	49
15	Bethlem 1819-1833,	50
5	Wakefield,	42
10	Stafford,	43
2	Dundee,	50
5	Perth,	46
—	Hartford, United States,	91

3. *Table of the average height of factory children from* 8 *to* 14 *years of age, distinguishing large towns, small towns, and rural districts, with the averages. From a return ordered to be printed by the House of Commons, 9th March* 1837.

Ages.	Situations.	Males.			Females.			Mal. &fem. togeth		
		No. measured.	Feet.	Inch	No. measured.	Feet.	Inch	No. measured.	Feet.	Inch
8 & und. 8½	Large towns	74	3	9 7/16	64	3	8 11/16	138		
	Small do.	115	3	9 3/4	94	3	8 3/4	209		
	Rural dist.	138	3	9 11/16	709	3	9	246		
	Average,	327	3	9 3/8	267	3	8 11/16	594	3	9 1/4
8½ —— 9	Large towns	72	3	11 3/16	67	3	10 3/4	139		
	Small do.	115	3	10 3/4	87	3	9 1/2	202		
	Rural dist.	152	3	11 1/32	118	3	9 5/8	270		
	Average,	339	3	11	272	3	10 3/8	611	3	10 3/4
9 —— 9½	Large towns	85	3	11 1/2	76	3	1 1/8	161		
	Small do.	195	3	11 9/16	180	3	11 9/16	375		
	Rural dist.	247	3	11 23/32	182	3	11 1/4	429		
	Average,	527	3	11 5/8	438	3	11 3/8	965	3	11 1/2
9½ —— 10	Large towns	86	4	0 1/16	73	4	0 3/8	159		
	Small do.	109	3	11 1/16	143	4	0	252		
	Rural dist.	223	4	0 19/32	159	4	11 7/8	382		
	Average,	418	4	0 1/8	375	4	0	793	4	0
10 —— 10½	Large towns	92	4	1 1/16	86	4	0 7/8	178		
	Small do.	227	4	0 5/8	225	4	0 13/16	452		
	Rural dist.	255	4	1	195	4	1 3/8	450		
	Average,	574	4	1	506	4	1	1080	4	1
10½ —— 11	Large towns	101	4	1 9/16	80	4	1 7/16	181		
	Small do.	183	4	1 15/32	152	4	1 9/32	335		
	Rural dist.	266	4	2 5/32	189	4	2	455		
	Average,	550	4	1 7/8	421	4	1 5/8	971	4	1 3/4
11 —— 11½	Large towns	110	4	1 19/32	94	4	1 5/16	204		
	Small do.	242	4	2	225	4	2 1/4	467		
	Rural dist.	312	4	2 15/16	258	4	2 1/2	570		
	Average,	664	4	2 3/8	577	4	2 1/8	1241	4	2 1/4
11½ —— 12	Large towns	111	4	2 3/8	86	4	3 1/16	197		
	Small do.	174	4	3 1/4	166	4	2 13/16	340		
	Rural dist.	274	4	4 1/8	226	4	3 1/2	500		
	Average,	559	4	3 3/16	478	4	3 1/4	1037	4	3 1/4
12 —— 12½	Large towns	133	4	2 7/8	122	4	2 15/16	255		
	Small do.	260	4	3 21/32	273	4	3 7/16	533		
	Rural dist.	374	4	4 5/32	317	4	4 19/32	691		
	Average,	767	4	3 3/4	712	4	3 7/8	1479	4	4

Ages.	Situations.	Males.			Females.			Mal. & fem. togeth		
		No. measured.	Feet.	Inch	No. measured.	Feet.	Inch	No. measured.	Feet.	Inch
12½ & und. 13	Large towns	121	4	3⅛	121	4	4 3/16	242		
	Small do.	229	4	4 13/32	206	4	4 9/32	435		
	Rural dist.	310	4	4 11/16	281	4	5 5/32	601		
	Average,	660	4	4¼	618	4	4¾	1278	4	4½
13 — 13½	Large towns	244	4	4½	293	4	4 9/16	537		
	Small do.	508	4	5¼	482	4	5⅛	990		
	Rural dist.	517	4	5 5/32	485	4	5 11/16	1002		
	Average,	1269	4	5⅛	1260	4	5⅓	2529	4	5¼
13½ — 14	Large towns	224	4	5 9/16	244	4	5 11/16	468		
	Small do.	349	4	6 11/16	395	4	6 7/16	744		
	Rural dist.	291	4	6 9/16	341	4	7⅛	632		
	Average,	864	4	6⅜	980	4	6⅛	1844	4	6½
14 —	Large towns	206	4	7⅛	246	4	7¼	452		
	Small do.	389	4	8⅛	402	4	8¼	791		
	Rural dist.	356	4	7¾	381	4	7⅞	737		
	Average,	951	4	7¾	1029	4	8	1980	4	7⅞
Tot. measured,		8469			7933			16402		

MISCELLANEOUS.

GRADUATIONS AND SURGICAL EXAMINATIONS.

Medical Graduations at Edinburgh.—On the 1st of August 1837, the Senatus Academicus of the University of Edinburgh conferred the degree of Doctor of Medicine on the following gentlemen, in number one hundred and five, after having gone through the appointed examinations, and defended publicly their inaugural Dissertations.

OF SCOTLAND.

William Brown, on Morphology.
Robert Butler, on Apoplexy.
James Barlas, on Artificial Pupil.
George Cossar, on Inguinal Hernia.
John Rose Cormack, on Air in the Organs of Circulation.
John Rawdon H. Comon, on the Nature, Symptoms, and Treatment of Bronchitis.
Thomas Crawford, on Paralysis.
Alexander Duncan, on Hernia.
Robert H. Davidson, on the Organs and Physiology of Digestion.
Hugh Donaldson, on Bronchitis.
James Edwards, on Neuralgia.
John Fortune, on Acute Hepatitis.
George Fraser, on Aneurism.
Thomas Gordon, on Erysipelas.
Francis William Grant, on the Nature, Diagnosis, and Treatment of Aneurism; with a few Remarks on the spontaneous Suppression of Hæmorrhage.
Alexander Greig, on Asphyxia.
George Dalrymple Gordon, on Acute Dysentery.
George Hood, on Aneurism, and its treatment.
James Johnston, on the Tongue, Pulse, and Urine, as indications of Health and Disease.
James Jopp, on Angina Pectoris.
William Ord Mackenzie, on the distinctive Characters, Classes, and Treatment of those Ulcers (including Hospital Gangrene) which have lately been prevalent in the British Army and Navy, on some Foreign Stations.
John Morison, on Apoplexy.
George S. Newbigging, on the Effusion and Organization of Coagulable Lymph.
James Stephen Reid, on Variola.
Wm. Scott, Observations on Pseudo-Inflammatory Affections.

John Spowart, on Tetanus.
Thomas Stratton, on Chronic Rheumatism.
William Scott, on Scarlatina.
Thomas R. Scott, on Wounds of the Thorax.
Henry Home Turnbull, on Venous Inflammation.
Arthur Saunders Thomson, Observations on the Influence of Climate on the Health and Mortality of the Inhabitants of the different Regions of the Globe.
John Gillespie Wood, Under what circumstances is the Operation of Trepanning to be had recourse to?
James Williamson Wallace, on Hydrocele of the Tunica Vaginalis Testis.
James Balfour Wishart, on Abortion.

FROM ENGLAND.

Henry Clark Barlow, on the Causes and Effects of Disease, considered in reference to the Moral Constitution of Man.
William Henry Brownson, on the Nature and Treatment of Gunshot Wounds, and their consequences.
John Hughes Bennet, on the Physiology and Pathology of the Brain.
George Schuyler Cardew, on Puerperal Insanity.
Joseph Cartmell, on Pseudo-Pathological Appearances.
Francis Cooke, on Pellagra.
John Wright Curtis, on the Functions of the Cœcum.
Charles Chadwick, how far are Secretion and Nutrition dependent on Nervous Influence?
John Grant, what are the relative advantages of different Trades and Professions, as regards their compatibility with Bodily Health?
William Towers Geary, on the Hydrated Peroxide of Iron as an Antidote to Arsenic.
John Houseman, on the Morbid Affections of Old Age.
Wm. Hey Hodgson, on Apoplexy.
Hamilton Kinglake, on Physiology of Digestion.
George Kennion, on a Sketch of some of the principal Diseases which are peculiar, or incident to the Puerperal State.
William Dashwood Kingdon, on Scirrhus.
Patrick George Kennedy, Observations on the General Pathology of Diseases of the Eye, with Remarks on the Characters which are Diagnostic of the Idiopathic and Symptomatic Ophthalmia.
Samuel Duncuft Lees, on the Pathology of the Ear.
Thomas Harvey Lowry, on Tetanus.
George Lund, on the Use of the Thyroid and Thymus Glands, and of the Spleen and Supra-renal Capsules.
George Anne Martin, on Scorbutus.
George Parker May, on Croup.
James Loftus Marsden on Kenothumia, or Ennui.
James H. Pring, on Chorea.
William Pringle on Phagedena Gangrænosa.
Arthur Powell, on the Causes of Disease.
Edward Cator Seton, on the Powers which move the Blood.
Michael Satterthwaite, on Pathological Chemistry.
William Stanger, on Cynanche Trachealis.
James Hales Shirreff, what advantage do we derive from Auscultation in detecting Pregnancy?
James C. Sortain, on the Function of the Cœcum.
Theodore Henry Shute, on Fever, being an Inquiry into its intimate Nature and Causes.
James Satchull, on the Signs of Pregnancy.
Henry Hunt Stabb, on Influenza.
Frederick Newell Slight, on Injuries of the Head from External Violence.

FROM IRELAND.

Thomas H. Burgess, on Paralysis.
John O'Brien Milner Barry, on Endocarditis.
Patrick Josephus Barry, on Rheumatism.
Michael Cormack, on Asthma.
Samuel Paterson C. Evans, on Equivocal, Comparative, and Human Generation.

James W. Fullerton, on Mortification.

Samuel Hunter, a Practical Treatise on Ruptured Urethra produced by external violence,—illustrated by Cases.

Wm. Hiliard, Some General Considerations on Phlebitis.

Edward Johnson, on the Anatomy of the Mammary Gland.

Hugh Montgomery, on the Origin and Mode of Formation of Tubercle in the Lungs.

Myles K. Mahony, Some Observations on Aneurism and Diseases of the Heart; with Case.

John O'Brien, on the Hygiene of Infants.

Eugene O'Neill, on Vesicular Emphysema.

John Pedder Phipps, on Cold Affusion in Croup.

Charles Ronayne on Cancer of the Uterus.

William Ancrum Reeves, on Delirium Tremens.

Robert Skerrett, on Malignant or Asiatic Cholera.

George Smith, on Ascites.

James Patrick Sheenan, on the Pathology of Dropsy.

William Tatlock, on Hydrocele.

John Waters, on Hypertrophy of the Heart, and on that of the Left Ventricle in particular.

FROM ABROAD.

William Bayard, from New Brunswick, on Asiatic Cholera.

Jonathan Haigh Branfoot, from Jamaica, on the acquired Perceptions of Hearing.

Joseph Edward Cummins, from Barbadoes, on Ophthalmia.

Alexander William Campbell, from Jamaica, on Acute Pericarditis, particularly as connected with Rheumatism.

James Alexander Fraser, from Dominica, on the connection of Nervous Energy with Muscular Contractility.

Alexander Hunter, from the East Indies, on the Pathology and Treatment of Granular Disease of the Kidney.

Thomas Hayle, from Jamaica, De Necrosi.

William Herries Madden, from New Brunswick, on the Connexion between the Muscles and Nervous System.

Lauchlan M'Lean, from Jamaica, an Account of the Bilious Remittent Fever, more particularly as it occurs in the West Indies.

Alexander Ross Morton, from the East Indies, on Dysentery.

Adam Lyszczynski, from Poland, on Small-pox.

James Mitchell, from Jamaica, on Scarlatina.

Henry Reed Melville, from the West Indies, on the Effects of Climate and Food on Man.

James Codrington Orgill, from Jamaica, on the Morbid Effects occasionally induced by the Operation of Mercury.

George F. Thomson, from the East Indies, on Croup.

Buchan Warren Wright, from Jamaica, on the Jungle Fever of India.

Surgeons' Hall, Edinburgh, 1st September 1837.—Since the 31st day of August 1836, the following Gentlemen have offered themselves as Candidates for the Diploma of the Royal College of Surgeons of Edinburgh, and after producing satisfactory evidence that they had completed the course of study prescribed by the College, have been admitted to examination, and found fully qualified to practise the arts of Anatomy, Surgery, and Pharmacy, and have received Diplomas as Licentiates of the College accordingly.

Scotland.

Silas Palmer,
James Mackie,
William Henry Neill,
John Fortune,
William Forsyth,
John Stewart Kilgour,
Walter Traill,
Charles M. Henderson,
David Coates,
David M'Lay,
John Smart Peddie,
Thomas Ayson,
William Rodger,
Peter Miller,
William Jamieson,
William Scott,
Archibald Douglas,

Donald M'Kenzie,
Andrew Murray,
James Davidson,
James Stewart,
George Fraser,
James Bryden,
William P. Banks,
James Philp,
Thomas Jameson,
George Davidson,
Robert Tulloh Easton,
Thomas Stratton,
Alexander Leith Emslie,
John Spowart,
James Mercer,
Angus A. Mackay,
Robert Jaap,
George M. Porteous,
William Bennet,
Benjamin M'Laren,
James W. Wallace,
Thomas Johnston,
Francis William Grant,
William Aitken Carlaw,
William Turnbull,
Edward Gibbons,
Andrew Lowson,
Robert Little,
George F. Munro,
Bernard Haldan,
James Robertson,
Robert A. W. M'Gregor,
John Sutherland,
Alexander Lees,
James Cameron,
William Scott,
John Gemmell,
Thomas Gordon,
Joseph Horne,
John Middleton,
Joseph Macintosh,
John Turnbull,
Spencer Thomson,
Edward George Irving,
William Arras,
Caleb Richerdson,
Henry Home Turnbull,
Charles Ritchie Kinnear,
George Murray Webster,
Alexander Greig,
Robert H. Davidson,
John Crawford Orchard
Hugh Bruce Landers,
James S. Mackintosh,
John Richardson,
John Macleod,
George D. Gordon,
James Barlas,
Richard Bannatine,

England.

William Newby,
Daniel Wane,
John Grant,
Thomas W. Nicholson,
George Schuyler Cardew,
Nicholas Oliver,
Arthur Charles Webster,
Fancis Cooke,
John Chadwick,
William D. Kingdon,
James Cornish Sortain,
Charles Olives Baylis,
Robert Chevallier Cream,
Edward Cator Seaton,
Michael Satterthwaite,
John Houseman,
Robert Mortimer Glover,
George B. C. Watson,
James Loftus Marsden,

Berwick-on-Tweed.

Mungo Park,

Ireland.

John Ryan,
Charles Grier,
Richard C. Ronayne,
Eugene Finn,
Samuel Donnelly,
James Maxwell,
Alexander T. Gunning,
Thomas Coote Young,
George Quin,
Thomas Rossiter,
John Waters,
Edward Johnson,

Abroad.

Rufus Smith Black,
John Allan,
George Daniel Gordon,
William Macnider,
William Robson,
Alexander Hunter,
Haynes Gibbes Alleyne,
John De Verd Leigh,
José Maria Montealegre,
George Charles Wallich,
Lauchlan M'Lean,
John James Atkinson,
Alexander Ross Morton,
William H. Madden
Jonathan H. Branfoot,
Arthur C. Macnish,
James Codrington Orgill,
Charles Cogswell,
Andrew S. Gregorowies,
Adam Lyszezynski.

Extracted from the Records of the Royal College by
Wm. Scott, *Sec.*

MATERIA MEDICA.

Salts of Gold in the Treatment of Scrofula of the Soft Tissues. (*Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences.* Prem. Semestre, No. 9, February 1837.)—M. Le Grand, to whom the profession is already indebted for a valuable work on the employment of the salts of gold in the treatment of syphilis, has recently proposed, in a memoir read before the Academy, apparently with much reason, the use of the same mineral in the cure of scrofula, where it affects the soft parts of the human frame, as the skin, the adipose and cellular tissue, certain parts of the mucous membranes, and particularly the lymphatic glands, both external and internal, and, in short, any texture not osseous or immediately connected with the osseous texture.

This agent M. Le Grand exhibits, either externally by means of auriferous frictions, or by dressing the sores with pure gold in the form of an impalpable powder mixed with lard;—or internally, in the form of pills or pastilles, or rubbed on the mucous papillated surface of the tongue. In the first case, that of impalpable powder, 1–60th part, or about 4 or 5 grains of gold powder, are made into an ointment with half an ounce of lard. M. Le Grand, however, thinks he has ascertained that it has not a medicinal action on the economy equal to that of the oxides or of the salts.

The forms of the mineral most strongly recommended are the oxide of gold by potass; then oxide of gold by tin, occasionally called the stannate of gold; and lastly, the perchloride of gold and soda, more generally known under the name of the muriate of gold and soda, in the order now specified, the most energetic being placed last. These last preparations are indeed so active, that they cannot be safely administered in doses above one-fifteenth, one-twelfth, or one-tenth of a grain; and in larger doses they would produce most serious disturbance in the economy.

These preparations, however, unlike antimony, arsenic, or mercury, are void of corrosive properties, and seem chiefly to excite the animal tissues to more salutary action; and, according to M. Le Grand, they are, when not sanative, not injurious. Hence their use may be much longer continued than those of the preparations of mercury or arsenic.

Santa Cruz, a Winter Residence for Invalids from the United States.—A letter respecting Santa Cruz as a winter residence for invalids; addressed to Dr John C. Warren, of Boston, Mass. By JOSEPH TUCKERMAN.—Boston, 1837. 8vo. Pp. 27. The Island of Santa Cruz, or St Croix, under the Crown of Denmark, has been recently a good deal resorted to by invalids, chiefly labouring under affections of the lungs, from the United States of America. From a letter addressed by Mr Joseph Tuckerman to Dr Warren of Boston, and who had gone thither by that gentleman's recommendation for symptoms of pulmonary disease, it appears to answer pretty well as a residence for invalids of this kind. The climate is mild and not very variable; the range of the thermometer is 68° in February, and 92° in August, and the medium temperature is from 70 to 76°. It is indispensable, however, both to guard against atmospherical vicissitudes by suitable clothing, especially flannel, to observe regular exercise, especially on horseback, if practicable, and also to be careful of dietetical indulgences. Mr Tuckerman exhorts invalids especially to resist the temptations to which, in this respect, they may be exposed, and recommends to abstain from pastry and some of the other delicacies which are occasionally produced at table in boarding-houses. He also recommends a temperate use of meats, by which, we understand, he means animal food, and a very cautious use of, if not a total abstinence from, preserves. As to wine and spirituous liquors, as the friends of invalids, he remarks, frequently recommend a moderate use of the former, or some weak brandy and water, in cases in which no medical man would sanction the advice, he expresses himself very strongly against the practice. The opinion there, he says, is almost universal, that stimulating drinks to a certain extent are indispensable for counteracting the enervating tendency of high temperature. This, however, is a very great mistake. He so far yielded to the advice himself as to take at dinner on each of four successive days a glass of wine diluted with water, but the consequences were slow fever for several days, and increased irritability of his lungs, and it was only by abstaining from this indulgence that he found these symptoms could be kept in abeyance. It appears, indeed, that though his residence in Santa Cruz retarded the progress of his pulmonary disorder, the peculiar symptoms of irritability of the bronchial membrane did not wholly subside till he embarked on his homeward voyage; but in the course of that voyage the cough left him, and his strength increased.

To the time at which an invalid should proceed to Santa Cruz it is important to attend. The usual time is to quit the United States in autumn, as previous to that time, especially in June and July, the weather is unsettled, to spend the winter in Santa Cruz, and to quit it in March or April. According to our friend and correspondent Dr Stedman, the most eminent physician on the island, it is unsafe for an American to sojourn in Santa Cruz beyond the 10th of May, because after that date the temperature is too enfeebling for those who come from a colder region. But Mr Tuckerman states, that it is unsafe to proceed north to Boston, or any town in similar latitude, because invalids are sure to suffer from the chilling influences of the east winds in June. He recommends, therefore, the invalid not to quit Santa Cruz before the 10th of May, and on his arriving in New York, or any port north of this, to proceed at once to Philadelphia, to Baltimore, or farther south, and not return to New England till the last week of June or the 1st of July.

Lastly, it is important in all cases of change of climate for the removal or alleviation of pulmonary symptoms, to take care that a patient be not sent when the lungs are very extensively and much injured.

INSURANCE COMPANIES AND INSURING PARTIES.

"The Medical Practitioners of Leeds and the neighbourhood, having been repeatedly referred to by Insurance Companies to give replies to series of questions relative to the health of individuals who have been placed under their medical treatment, and who are applicants for policies of insurance, have resolved, 'That for the future they will return unanswered such communications, unless they be accompanied by a suitable Professional Fee from the Office, considering that the Insurance Company is the party benefited by the information thus obtained.'—*Leeds, July* 1837."

We have been requested to give insertion to the above notice; and we do so with great pleasure, the more so that it shows that the profession begin to see that it is requisite to act in a united body, in order to abate one of the greatest abuses, that has ever been allowed by slow and gradual steps to establish itself.

We may mention that, some years ago in this city, a meeting was held among a considerable number of practitioners, to concert the means of putting a stop to the grievance complained of. From some causes, however, which were never well explained, it did not give birth to any active proceedings. We know, however, that it is long since several of our friends, as well as ourselves, have refused to grant certificates at the application of insurance offices, unless these documents were paid at the usual rate of professional duty; and we have had no reason to regret the resolution. The impertinence and audacity of these insurance offices have indeed always been to us matter of astonishment; and we have been quite unable to comprehend, upon what ground either they or the parties assuring, who may have once or twice consulted any physician, should presume to request from him a confidential written opinion requiring time and attentive examination, as well as the exercise of a considerable proportion of accurate professional knowledge, without tendering adequate compensation. Certain it is, that they would not dare to request any lawyer to give an opinion on such terms, otherwise they would be speedily taught a lesson which would prevent the application from being renewed.

We must take this opportunity, however, of saying that, if insurance companies and their applicants are to blame in this matter for soliciting certificates without payment, not less are the members of the medical profession for granting them without adequate compensation. If the certificate be of any value at all it is certainly worth being paid for; and he must estimate his time and attainments at a low rate, who gives such a document without. Let us not omit to add, that much of this evil proceeds from the absurd and pernicious system of competition among the profession; that insurance companies and the public generally being well aware of this, take every advantage of it; and that, if firm and decided measures be not taken to abate the nuisance, it will terminate in degrading the profession to the lowest degree, and placing them completely at the mercy of persons equally void of correct principle and common honesty.

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END OF VOLUME FORTY-EIGHTH.

No. CXXXIV. will be published on the 1*st of January* 1838.

EDINBURGH:
PRINTED BY JOHN STARK, OLD ASSEMBLY CLOSE.

JUN 1969

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